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Original Communications.

FURTHER REMARKS ON THE ABDUCTION TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR.[1]

BY ROYAL WHITMAN, M.D., NEW YORK.

Although it is generally admitted that the results of treatment of fracture of the neck of the femur are most unsatisfactory, yet discussions on the subject are not often concerned with the possibility of an improvement in its application, but rather with the circumstances that hamper or prevent it.

This lack of technical interest may be explained by the prevailing impression that this particular fracture differs from all others in that the quality of the patient or the character of the injury renders treatment, however skilfully applied, of little avail.

For example, a very large proportion of the patients are supposed to be so old or so feeble that direct treatment is impracticable. It is affirmed also that if the fracture is of the small part of the neck (intracapsular), the presence of the synovial fluid, together with the insufficient blood-supply of the inner fragment, makes repair very unlikely even if accurate adjustment were possible. Indeed, the possibility of union in this situation was questioned by prominent surgeons for many years.

If, on the other hand, the fracture occurs in younger subjects, it is thought to be caused in many instances by a degree of violence that must shatter the bone

[1]Read before the Johns Hopkins Medical Society, March 5, 1906.

beyond the possibility of restoration of form or function.

It is more often in this class of cases that the fracture is incomplete, or impacted, and as experience has shown that impaction (contact) is usually followed by union, while complete fracture often fails to unite, one is taught that no attempt should be made to rectify the deformity for fear of the non-union that might follow the disengagement.

If, then, many of the patients are too old for treatment, if non-union is to be expected in spite of treatment in intracapsular fracture, and if in all incomplete fractures the aim is to preserve the impacted deformity, it would appear that the opportunity for the treatment of the fracture as a fracture must be small indeed.

In fractures involving other joints the surgeon anticipates discomfort, stiffness, and general impairment of function in great degree proportionate to the displacement; non-union, even in the aged, being a rather remote possibility. At the hip, however, the standard of success is union, the disability that must follow deformity being of secondary importance.

Although it is, as has been stated, the general impression that the majority of the patients are too old to withstand treatment, and that in any event the prospect of success is remote, yet as a matter of fact some treatment is applied in the majority of cases.

The vigorous subject receives more of it than one who is feeble, but the quality is the same, and, as ordinarily applied, it is a treatment that may be fairly characterized as perfunctory.

I am convinced that the teaching which, in great degree, is responsible for the present neglect of this the most important because the most disabling of all fractures is traditional and misleading.

It is certainly not true that the fracture is practically an attribute of old age. I have from time to time during the past sixteen years reported cases occurring in childhood and adolescence, thirty-six of which have come under my observation. Hesse (*Beiträge zur Path. Anat. und zur allg. Path.*) has recently tabulated forty-six others, in all but two of which the diagnosis was confirmed by Roentgen pictures. It is probable also that a large proportion of the cases of unilateral coxa vara of adolescence may be classed as traumatic (incomplete fractures), injury either inciting the deformity or exaggerating it. In fact, it may well be that the two periods of life at which the neck of the femur is most susceptible are adolescence and old age. At all events the fact that the injury is not uncommon in early life may be considered as established, although even now it is scarcely recognized in the text-books.

It is not true that the injury in vigorous adults presupposes necessarily extreme violence. Fractures at and about the hip are often caused by what is usually classed as slight injury, a slip on the stairs or a fall on the sidewalk. Blecher, for example (*Deut. Zeit. f. Chir.,* Bd. 77, S. 302), has recently reported four cases in soldiers from such slight causes as stubbing the toe, blows on the hip, and the like, and several similar cases have come under my own observation.

In this class the fracture may be incomplete, or if complete the fragments may not be sufficiently displaced to present the classical signs of fracture, and as the patients are sometimes able to hobble about with the aid of a cane or crutch within a few days or weeks they are usually treated for contusions until opportunity for the proper treatment of the fracture has passed.

Finally, it has not been proved, to say the least, that repair after complete fracture is improbable if the necessary opportunity is assured.

It is of course admitted that fracture of the neck of the femur is far more common in advanced life than at any other period, but this is offset by the relatively small number of the aged compared with those among whom the fracture is possible.

Fracture of the neck of the femur in an old person usually presents such unmistakable symptoms that a diagnosis is inevitable. The fracture in a child, which is usually incomplete, is almost as inevitably overlooked. This is illustrated by the fact that in but two of the thirty-six cases that I have reported had the diagnosis been made at the time of the injury, and the same is true in a less degree of the young adults. As a result, the favorable class has a very inadequate representation in hospital wards. Hospitals receive the least favorable class of cases,

and the treatment is conducted by those of least experience—the house officers, who must follow the methods of routine. As the hospitals furnish the statistics both as to the quality of the patients and the average results that may be obtained by treatment, the probability, at least, of misrepresentation is apparent.

The present discussion is on the treatment of fracture of the neck of the femur, not on the disabilities of the patients that may make it difficult or impracticable. Let us therefore consider only that favorable class, be it large or small, in which effective local treatment may be applied.

The impacted or incomplete fracture in a young subject is at the present time the only form in which the prognosis is favorable, and in this class the accepted treatment is to prevent a disturbance of the impaction.

The impacted fracture in its characteristic form is traumatic coxa vara—that is, the neck is depressed, and as the impaction is most marked on its posterior surface, the limb is usually rotated outward. The effect, then, is elevation of the trochanter with possibly an inch of shortening of the limb, persistent outward rotation, and limitation of abduction and flexion proportionate to the deformity of the bone.

It must be borne in mind, in considering treatment, that normal function is absolutely dependent upon normal form, because normal form is the result of normal function. The upward inclination of the neck of the femur from the shaft permits the normal range of abduction of about forty-five degrees in the attitude of extension. At this limit the upper border of the neck of the femur, now approximately in the horizontal plane, is in contact with the upper border of the acetabulum, the trochanter is applied to the side of the pelvis, and the lower border of the capsule is tense.

If the neck of the femur is lowered, by injury or otherwise, to a right angle, it is evident that the range of abduction will be markedly lessened or lost. Furthermore, the joints are controlled by the muscles, which check movement before the limit permitted by the articulation has been reached. Assuming, then, that a fair range of abduction is required for ordinary use, because of the extra limitation set by the muscles, it is explained why even a moderate restriction of the normal range due to deformity may cause functional disability. In coxa vara, traumatic or otherwise, one often finds the limb habitually used in an attitude of adduction before the range of abduction has been completely restricted. This attitude induces what is known as apparent shortening, due to the upward tilting of the pelvis on the affected side. Because of this the limp after recovery from impacted fracture is usually more noticeable than the actual degree of shortening would explain. I have on former occasions called attention to the fact that depression of the neck of the femur, traumatic or otherwise, by exposing the part to a greater strain, may induce a gradual increase of the deformity in young subjects, and in all probability the same is true in the older class also. In such cases the irritation induced by strain upon the joint causes congestion and pain, and the resulting muscular spasm increases the distortion, which is confirmed by the retraction of the muscles and fibrous tissues.

The obvious advantage of impaction is contact and immediate fixation, which will prevent further tearing of the periosteal covering uniting the two fragments that may follow complete fracture, when the movement of the injured limb is not restrained.

It is not likely that repair depends upon the continuity of the vessels of the bone itself at the injured point, nor would it be claimed that impaction in other situations is more favorable to repair than simple apposition of the fragments.

If, then, the deformity might be reduced or even lessened without further injury, and without displacement, union should not be endangered, and restoration of normal function would be at least possible.

The situation of the injury prevents direct manipulative reduction of the deformity, but one may take advantage of the anatomical arrangement to accomplish it indirectly. Thus, as the deformity limits abduction by the direct contact of the depressed neck with the upper border of the acetabulum, one may by forcible abduction of the limb exert such pressure as to change the relation of the shaft of the femur to the neck. For this purpose one uses the leverage of the limb and the

fulcrum provided by the upper border of the acetabulum, depending upon the cotyloid ligament and the capsule to fix the head. When by this maneuver the limb is placed in normal abduction, it may be assumed that the normal angle between the neck and the shaft has been restored, and that if the injured part be fixed securely union in the improved position will be assured (Figs. 1 and 2).

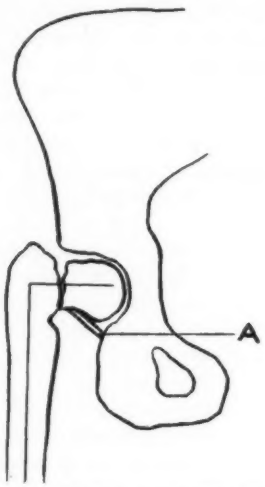

FIG. 1.—Incomplete fracture, illustrating the mechanical limitation to abduction.

This procedure can be accomplished without violence and without endangering the process of repair, in the manner which I have already described on several occasions.

The patient, having been anesthetized, is placed carefully upon a box about seven inches in height and of sufficient size to support the head and the upper part of the trunk. A pelvic rest is placed beneath the sacrum and the extended limbs are held by assistants. The sound limb is then abducted to the normal limit to serve as a guide and to fix the pelvis. The assistant holding the injured limb then slowly under gentle traction abducts it, the surgeon meanwhile supporting the joint with his hands and pressing gently downward upon the trochanter. The resistance that the deformity offers to abduction is recognized, but it is easily overcome in recent cases. When approximately the normal limit has been reached, a closely fitting, long plaster spica bandage is applied. No violence has been exerted, and there can have been no displacement of the fragments in the ordinary sense.

It is because this method makes the reduction of deformity practicable, and because subsequent fixation is but a continuation of the reduction, that I advocate a treatment at variance with all the recognized authorities.

In the ordinary case of impacted fracture it is assumed that the injury is near the base of the neck, and even if there is extensive crushing it would not contraindicate fixation in the attitude of abduction. If, on the other hand, it were at the junction of the head with the neck, abduction would be but slightly limited, and fixation in that attitude, though it might not affect the deformity, would at least prevent the shortening of the adductor muscles which is almost always present when the limb has been fixed for a long time in the line of the body.

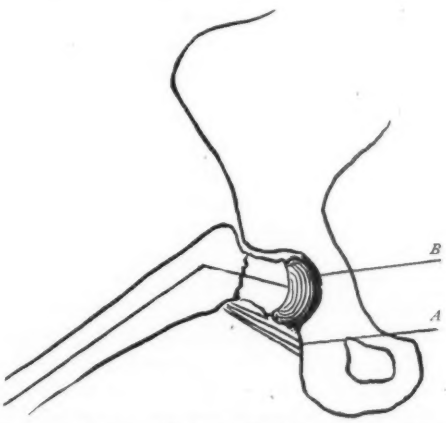

FIG. 2.—Reduction of the deformity by forcible abduction. A, Capsule; B, cotyloid ligament.

If the fracture is complete there is a marked tendency toward separation of the fragments. As a rule the shaft is drawn upward, rotated outward, and displaced backward in its relation to the inner fragment. If the fracture is at the base of the neck, sufficient apposition to secure union is often obtained even by defective methods. If it be of the small part of the neck, the area of each fragment is so small that adjustment is difficult. Apposition is essential to repair. If, then, one finds on removal of the splint or other appliance a degree of shortening and outward rotation of the limb sufficient to prevent contact of the fragments, it will not be necessary to consider

deficiency of circulation or the obstacle offered by the synovial fluid to account for non-union.

The ordinary routine methods of treatment are, it seems to me, faulty, in that neither primary reduction of the deformity nor efficient after-support is assured. I have therefore suggested fixing the limb in complete abduction in the manner already described.

The particular advantages of this attitude are these:

1. When the extended limb is placed in complete abduction, the trochanter is firmly apposed to the side of the pelvis, so that upward displacement of the femur is impossible.

2. In this attitude the capsule is made tense: thus it should serve to direct the fragments toward one another.

3. The deforming influence of muscular contraction is removed, since the abductor group is relaxed, while the contraction of the iliopsoas muscle in this position would draw the fragments toward one another (Figs. 3 and 4).

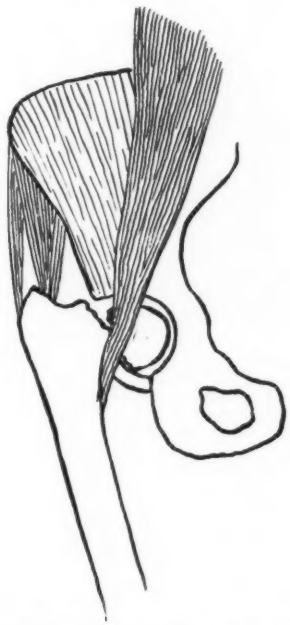

FIG. 3.—Complete fracture, illustrating the effect of the muscles in increasing the displacement.

The patient, having been anesthetized, is placed in the position already described. The limb on the injured side is flexed somewhat and rotated inward to disengage folds of capsule that may have fallen between the fragments. Manual traction with counter-traction is then made until the limbs are shown by measurement to be of equal length. The assistant then abducts the extended limb on the pelvis, which is fixed by full abduction of its fellow, the operator supporting the joint and pressing the thigh upward from beneath; the aim being to force the fragments forward against the tense anterior wall of the capsule.

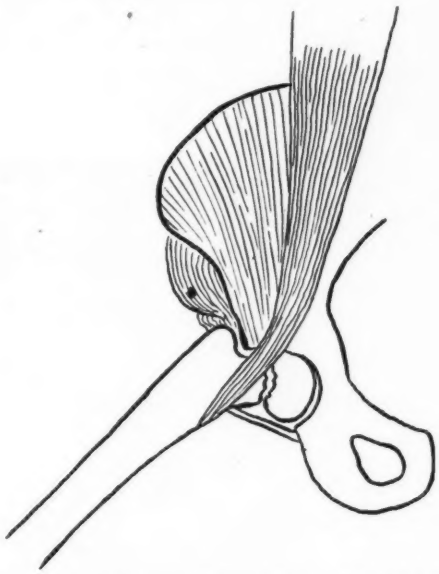

FIG. 4.—Illustrating muscular relaxation, and the fixation assured by the abducted position.

When the trochanter is firmly fixed against the side of the pelvis the long spica plaster bandage is applied. This should be strengthened beneath the joint by a bar of steel or aluminum shaped like the Thomas hip-splint, in order to support the femur in a plane somewhat above that of the trunk and to prevent it from sinking backward below the inner fragment. The outward rotation is of course corrected at the same time.

I have elsewhere described the short or modified spicas which permit the semi-reclining posture, and the use of traction in connection with the support in those cases in which the limb is placed at less than the limit of abduction, as might be necessary if an anesthetic were not administered, as in older subjects. But for the present purpose only the most favorable class of cases is under consideration, and the long spica reaching from the line

of the nipples to the extremity of the toes is, under ordinary conditions, the most effective support. If this is properly applied over well fitting shirting, and if the bony prominences are carefully protected with thick sheet wadding or similar material, it is more comfortable and far more effective than the insecure support of the ordinary lateral splint, since the patient may be turned and lifted without danger of disengaging the fragments.

The only appliance that is of equal efficiency as a support is the Thomas hip-splint, and as this fixes the limb in the line of the body its principle is of course essentially different.

lowed to assume the attitude of flexion and adduction, to say nothing of the effect of fixation and protection in lessening the discomfort and pain that are usually so persistent and so depressing in cases of this character.

If union has been obtained, however, treatment should be continued with the aim of restoring function; for in this, as in all other fractures involving joints, stiffness, weakness, and discomfort persist for a long time. This is explained by the changes within the joint incidental to repair, and by the muscular contraction and atrophy that have followed the injury and its treatment. Thus one should en-

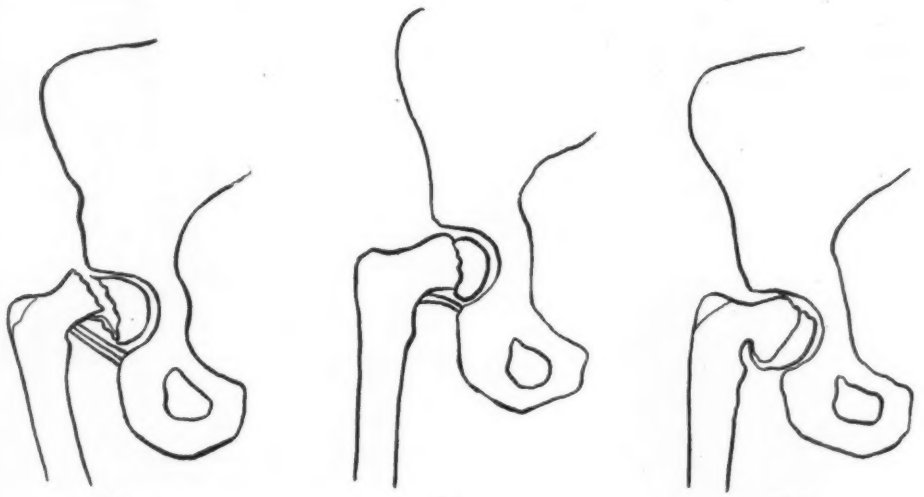

FIG. 5. FIG. 6. FIG. 7.

Types of epiphyseal fracture: 5, Complete separation which may be treated effectively by abduction; 6 and 7, partial separation, necessitating the open operation.

There is another decided advantage in the abduction treatment even if union is not obtained, for in the attitude of extension and abduction the trochanter is apposed to the side of the pelvis in the neighborhood of the anterior inferior spinous process. This is the position of the greatest stability that one endeavors to assure after excision, or in the treatment of congenital dislocation of the hip that cannot be reduced.

In these unsuccessful cases, therefore, provided the open operation were not practicable, the abduction having been lessened to the proper degree, the limb may be supported by a short leather spica, or suitable appliance. In this attitude the weight-bearing capacity of the limb must be much greater than when it is al-

deavor by means of massage, by passive movements, and by active exercises to restore a range of motion sufficient to permit ordinary functional use and the strength to use it. For it is the recurring strain on contracted tissues, and incidentally the weakness that follows impaired function, that cause much of the discomfort in the so-called successful cases.

Attention may be called again to the fact that the neck of the femur is subjected to much greater strain than falls upon other bones during the period of repair, and this combined with disordered nutrition may induce occasionally the changes in and about the joint resembling those of arthritis deformans. In many instances, therefore, the use of a modi-

fied hip-splint with a joint at the knee, which permits motion and yet relieves direct pressure, would enable the patient to resume functional use comparatively early; and functional use, provided it does not cause discomfort, is, of course, an advantage, in that it favors repair.

That pain and disability may persist long after a fracture has united is illustrated by the following case:

A woman forty years of age slipped on the sidewalk, injuring the right hip. She was able to walk with assistance, but as the disability persisted she was admitted to a hospital three weeks later, where she received the usual treatment for fracture, and was ultimately discharged using crutches. In August, 1905, about seven months after the accident, she was admitted to the Hospital for Ruptured and Crippled because of persistent disability, pain on motion, and particularly pain at night. Although the shortening was less than an inch, the muscular spasm was so marked that a diagnosis of ununited intracapsular fracture was made, and the joint was opened for the purpose of nailing the fragments, but to my surprise there was firm union of a fracture at the junction of the head and neck, the head being somewhat displaced downward and backward. Some irregularities of the bone were removed, and the wound was closed. The contracted muscles were then stretched, the limb placed in abduction and fixed by a short spica bandage permitting traction on the limb, a treatment which immediately relieved the pain. This case illustrates the fact that intracapsular fracture may cause symptoms, namely, pain in the knee, with muscular spasm and deformity, so marked as to simulate disease. It indicates, therefore, the importance of rest and protection long after the fracture is united if function is to be restored.

Fracture of the neck of the femur in early life is peculiar in that there are two varieties, both of which are usually in-

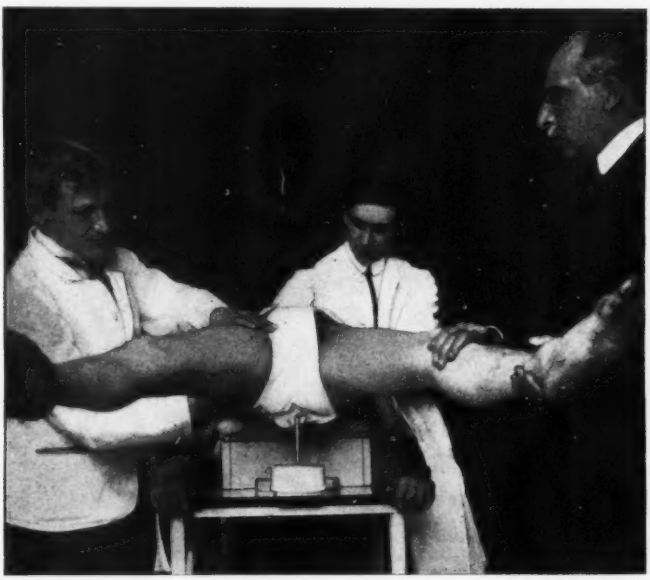

FIG. 8.—The method of reducing deformity by traction and abduction.

complete. The first, more common in childhood as the result of direct violence, is a direct depression of the neck as a whole, the injury being at some distance from the articulating surface.

The other form is partial separation of the head at the epiphyseal junction, a form more common in adolescence and in individuals predisposed to this particular weakness, a notable predisposition being latent coxa vara. As the articulating surfaces are directly involved, the pain, weakness, limitation of motion, and eventual disability are more marked than in the former class.

Less often the separation may be complete, as illustrated by the following

case (Fig. 5): A girl nearly fourteen years of age, who had been admitted to the Hospital for Ruptured and Crippled for the treatment of hip disease, was first seen on January 11, 1906. About three weeks before she had been thrown down on the sidewalk, falling on the left hip. She was immediately disabled, and had suffered since from pain and discomfort. On examination it was noted that the left limb was rotated outward and somewhat adducted. There was three-quarters of an inch of shortening with corresponding elevation and prominence of the

Epiphyseal fracture. The case reported.

trochanter. Motion was almost completely restrained by muscular spasm. The accompanying *x*-ray picture shows complete separation at or about the epiphyseal junction, and on examination under anesthesia crepitus indicated that it was complete. The case was treated in the manner described, and an *x*-ray picture taken a week later showed accurate adjustment of the fragments.

If, as is more common in this form of injury, the displacement is incomplete, the fragments being firmly adherent to one another, the joint should be opened. If the displacement is slight the irregularities of the bone that interfere with motion may be cut away (Fig. 6). But if it is greater the head should be completely separated with a thin chisel and replaced in proper position. Primary operative (Fig. 7) treatment is indicated in this class of cases, because the deformity which disorganizes the joint being at the articulating extremity of the neck it could hardly be remedied by abduction.

My own work has brought me into contact particularly with unfortunate results of treatment, with mistaken diagnosis, and with unrecognized injury.

Complete fracture. A case in which traction and abduction would have apposed the fragments.

While it has convinced me of the unreliability of the present statistics and of the inadequacy of treatment, it has not provided an equal opportunity for the application of positive treatment at a time when success might be reasonably anticipated. I am not therefore in a position to compare results with those accepted as representative even if it were desirable. I have, however, succeeded already in disproving one axiom, namely, that perfect functional recovery is impossible after this injury. In three cases —two in childhood, in which the fracture was incomplete, treated about three weeks after the injury by the abduction method, and one in an adolescent, in which by open operation the displaced head was separated and replaced in proper position several months after the accident—perfect function was restored. In two other cases, one treated by forcible abduction and the other by open operation, the patients walk without limp, but a slight degree of limitation of motion remains. In a case of complete intracapsular fracture in a woman thirty years of age, in which the fracture had been overlooked because of other disabling injury, the treatment, although not applied until twelve weeks after the accident, was followed by firm union without limitation of motion. The patient still limps, but it is believed that this will eventually disappear.

Two cases of impacted fracture in adults, one treated three weeks and the other ten weeks after the injury, resulted successfully, but the final functional results cannot be stated. One patient was walking about with the aid of a cane when she left the country. The other was discharged from the hospital wearing the plaster bandage, and has not been seen since. It is reported, however, that he is perfectly recovered. A case of fracture of the neck of the femur in a man forty-two years of age, in which perfect functional recovery followed treatment by this method, has been reported recently by Ashcroft (*Medical Record*, Oct. 21, 1905).

In but one case, that of a fat woman seventy years of age, has the treatment been applied soon after the injury, and this case does not come within the scope of this discussion. I may state, however, that this is by no means the only case in which I have used this appliance in the treatment of patients of advanced years. In fact, an extended experience with the plaster spica in the adult class, after open operation for ununited fracture for remedying deformity by osteotomy and the like, has proved that this support is as practicable as any other fixation apparatus.

It must not be inferred, however, because the plaster spica is recommended as a convenient means of fixing the limb that it is the essential part of the treatment. This essential is the attitude of abduction, either for the purpose of reducing deformity or for apposing and fixing the fragments if the fracture is complete. In view of the fact that the limitation of this important movement is almost always a cause of disability even in successful cases, treated with the limb in the line of the body it would seem that the position of abduction might be employed with advantage in connection with other methods of treatment.

In conclusion I may say that I am convinced that the deformity of impacted fracture may be reduced or lessened without the slightest danger to the patient, and with a corresponding improvement in the functional result. It is because of the method of accomplishing this that the treatment is far less radical than would at first appear.

Complete fracture, especially if the fragments have been widely separated, presents a far more difficult problem.

It is stated by one authority "that prolonged complete immobilization of a fracture of the neck of the femur is practically impossible, that accurate coaptation of the fractured surfaces is a matter of chance, and that the reason for the *habitual* failure to get bony union is to be found in the inability of the surgeon to meet the two principal indications of treatment, namely, coaptation and immobilization, not to any inability of the tissues themselves to do the work required of them."

This is a fair statement, doubtless, as applying to the present routine of treatment, since it is amply justified by statistics of final results. I do not believe, however, that fair coaptation need be a matter of chance, nor that practical fixation is an impossibility, if the treatment described were properly applied.

It will be suggested, doubtless, that such application requires more skill, or at least more assistance, than can be looked for under ordinary conditions. This is admitted; also that there are many patients to whom its application would be impracticable. At the present time, however, the only appreciable distinction in the treatment of the vigorous and the feeble patient is one of quantity, not of quality, and in hospitals, where every facility is provided, the quality is no better and the quantity is usually less than in practice at large.

The question for discussion is this: Is the treatment that has been described, if applied under the most favorable circumstances, more likely to fulfil the conditions that are essential to success than other methods that are acknowledged to be unsatisfactory? This is a vital question, for if it is once admitted that success is here, as elsewhere, dependent upon skill in treatment, fracture of the neck of the femur will no longer be a neglected subject.

FRACTURE OF NECK OF FEMUR.

By De Forest Willard, M.D.,
Surgeon to the Presbyterian Hospital, Philadelphia.

The treatment of fractures of the neck of the femur must necessarily vary with the character of the fracture and the age and condition of the patient.

Impacted Fractures.—Impacted fractures are not uncommon, and since the introduction of the *x*-ray the surgeon should be satisfied with a few diagnostic indications. Slight shortening with moderate eversion, diminished arc rotation, and relaxation of fascia lata are sufficient. After the *x*-ray shadow has been secured, the sooner such a fracture is dressed with plaster-of-Paris casing, extending from the thorax to the knee (or in restless cases to the leg), the more rapidly and certainly will union take place.

In fractures of the neck with mobility; complete eversion, moderate shortening, lessened arc rotation, and relaxed fascia lata will be sufficient for diagnosis even though a skiagraph cannot be secured. In any case of doubt an anesthetic will greatly assist in diagnosis. Treatment must vary in accordance with the age and condition of the patient. As a general rule (though subject to slight exceptions) union need not be expected in an individual over sixty-five; under that age measures to secure union should always be instituted with expectation of good result. With the patient under sixty, in good health, and where the skiagraph shows that the outer fragment can be brought down into good line with the caput, a steel nail or screw driven through the trochanter into the head will assist markedly in maintaining accurate apposition. The latter is best, as it can be buried and primary wound union obtained. The screw can be readily removed also after union has been secured and its presence is no longer needed.

In old and debilitated patients I make no attempt to secure union, simply making them comfortable, placing them upon a gas-pipe frame or tray with canvas support for trunk and legs, leaving a vacancy from the sacrum to below the anus. This allows them to be raised from the bed without disturbance, and the ends of the stretcher being supported, they can be kept clean and bed-sores avoided. Extension by pulley and weight and large sand-bags may be used intermittently, depending upon the amount of comfort or discomfort derived from their employment, but they are not essential. The patient should be allowed to sit up as soon as possible, the chief attention being given to the condition of health.

The intermediate cases—those that bear confinement well—can be treated by a moderate amount of extension with pulley and weight, the gas-pipe frame already alluded to being of great benefit in securing comfort and cleanliness. When confinement is not well borne, plaster-of-Paris from thorax to knee is of great benefit and allows the patient out of bed at an early date. This dressing is also of great service in mania a potu and delirious cases.

In many cases early release from bed may also be secured by adapting to the patient a Thomas posterior bar hip-splint with one band around the thorax, another at the pelvis, two at the thigh, and one about the leg. With crutches and a high shoe, locomotion is readily secured; its use should be continued for many months. I have never tested the Ruth lateral

double traction method, but it seems practical.

In cases that present themselves a year after the injury the problem is a difficult one. If the *x*-ray shows marked absorption of the neck, the best treatment will be to permit the patient slowly to form a false joint by voluntary movements. If, however, the head, trochanter, and neck are in fair line with the joint, the fragments may be screwed or nailed together. An open operation with fixation of the fragments requires so much manipulation that it is a serious matter and is not advisable, provided the patient has already secured a fair amount of fixation and is able to move about without serious pain.

In cases in which it is decided to secure a false joint, an apparatus with leather encasement of pelvis and body, with another stiff leather band encircling the thigh, will be very helpful. These broad bands may be connected by a joint which can be unlocked for the sitting posture and locked when the patient is erect.

THE DIAGNOSIS AND NON-SURGICAL TREATMENT OF FRACTURES OF THE NECK OF THE FEMUR.

By Oscar H. Allis, M.D.,
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Fractures of the neck of the femur are unique and form a class by themselves in one particular, viz., that the efforts usually put forward to establish a diagnosis *aggravate* the conditions, render the patient a hopeless cripple, and entail upon him[1] a legacy of superadded suffering.

Such an arraignment of the medical profession certainly calls for an explanation, and this is not difficult to produce. The physician in assuming charge of an injury is held responsible in our civil courts, and unless he can defend himself by reference to standard works he is liable to heavy damages. Nor is this all: for even when he is fortunate enough to escape legal action, he cannot escape the harsh and often unjust criticism of men in his own profession.

The medical student learns from the lips of the professor of surgery, and the practicing physician from surgical works, that *crepitus* is the crucial test of injuries of the bony frame, and to undertake the treatment of an injury without first establishing the existence or nonexistence of crepitus is as reprehensible as for a mariner to start out upon the ocean without charts or compass—and this in the main is correct teaching and correct practice. What I wish in this communication is to lay down an axiom that should be borne in mind, viz., that *when a diagnosis aggravates the disease the patient is better off without a diagnosis.*

And this leads up to the very practical question, Is it possible to establish a diagnosis without injury to the patient—without even placing in jeopardy any element of repair that has escaped the traumatism?

To this fair and important question I have simply this to say: The diagnosis and treatment of fractures of the neck of the femur are among the most important problems that come before the practitioner of medicine and are not to be hastily assumed. Every injury of the hip calls for the most careful inquiry, most careful investigation as to the circumstances attending the injury, and the condition of the patient at the time of the injury.

One of the first questions to ask the patient is, "Were you rendered instantly and completely helpless by the injury?" Upon this question the attending physician should not be put off by vague and indefinite answers. Many a one has been deceived by the answer that the patient was assisted *a little and walked to the nearest house,* or to the nearest place of rest; but if the question of bearing any weight upon the injured hip is insisted upon the person will acknowledge that the limb was rendered absolutely helpless both from pain and loss of ability to use it. The *instantaneous* effects of a traumatism, the *sudden onset of pain,* and *the degree of helplessness* in the injured limb can always be elicited if the questions are direct and insisted upon.

The question of the manner and degree of traumatism is one that demands careful consideration. The neck of the femur is by no means a feeble part and easily broken: witness the feats of the athletes

[1] To avoid unnecessary repetition I employ only the masculine pronoun.

—the wrestlers, the sprinters, and the vaulters. In the prime of life the neck of the femur cannot be broken save by commensurate violence, and violence that will break the neck of the femur in a man in the prime of life should not be underestimated by the attending physician.

In advancing years the bones lose their toughness and become brittle. There are few physicians of large general practice who have not known the aged and infirm to fracture the neck of the femur by a trip in the carpet, slipping from a chair, getting out of bed, or some similar trifling violence. In cases like these the pain and instant utter helplessness should have great weight in arriving at a diagnosis.

If the injury is one to which the physician is summoned, he will find the patient lying on a lounge or in bed with the clothing unchanged. Nothing can be gained by an examination before the patient is undressed, and hence the utmost gentleness should be employed in conveying the injured party to a suitable place —his home or a hospital. Under such circumstances the transportation will be easier and less painful if the entire lower limbs are gently and securely bound together, the bandage being passed around the clothing—*i.e.*, the dress or the pantaloons. No officious manipulation of an injured, painful limb ever did a patient any good or redounded to the credit of the first-aid surgeon. So, too, in the removal of the clothing—this had better be sacrificed than to add to pain or jeopard the repair of the injury. No diagnosis should be attempted until the patient is in bed and the clothing removed.

With the person reclining with both hips and limbs bare, ask the patient to move a little nearer the edge of the bed. If the patient says it is impossible he has confessed to his utter helplessness. I always insist upon the patient making an effort, and almost invariably the patient will assist the injured limb by insinuating the toes of the sound leg beneath the ankle of the injured limb. This is a confirmation of the previous statement that "it is impossible."

The examiner has not failed to note that the injured limb is more everted than its fellow, and that *inversion* as a voluntary act is painful if not wholly impossible; he has not failed to notice that there is shortening by the comparing of the two inner malleoli; and one thing of equal importance is that the two thighs lie *parallel* and the injured limb lies full length, touching evenly its whole length. This condition will not be present in a recent dislocation, and is and must always be present in fracture of the neck.

If the patient can be gently assisted to turn on his face a valuable aid in diagnosis can be obtained. Ask him to press the pelvis into the bed. As he does so the gluteal muscles of the sound side will act, and a gluteal depression or dimple will be created. On the injured side there will be no response from the muscles.

Although it would seem harsh to some readers, I have not often failed in getting my patient out of bed at my first visit, with a view to inspection of the limbs in the erect posture. In this position I examine the tension of the muscles on the sound side and compare it with the soft and flabby state upon the injured side. In the erect posture one can readily detect any want of parallelism of the two limbs, and also note the eversion or inversion of the foot.

The tenseness of the fascia lata and its loss of function must not be overlooked. This fascia is made tense by muscular action (through the gluteus maximus and tensor fascia femoris); it is also made tense by adducting the femur as we stand at rest. The reader can readily note the tenseness of this fascia at two points—one, as a round tendon at the side and just above the outer condyle of the femur, and the other between the crest of the ileum and the great trochanter. The late Dr. D. Hayes Agnew was known to say that the diagnostic value of the fascia lata in fracture of the neck of the femur was the most valuable contribution to surgery that the writer had ever made. The reader can study this fascia to advantage upon himself. If, standing erect, he will place the tips of his fingers on the outer side and just above the condyles and sway his body to the right and left, he will find the tendon of this fascia will appear and vanish according to his position, and the same change of posture will make it disappear or prominent above the great trochanter.

In the examination of a hip after a recent injury the absence of marked de-

formity is in itself a valuable diagnostic point. A recent dislocation carries with it the earmarks of *a special local condition.* There is not a single variety of traumatic dislocation that is unattended with marked deformity; hence if when the patient is stripped and standing erect the limbs are parallel there can be no dislocation. The diagnosis must then stand as a simple traumatism or a fracture. Whichever it may be the employment of an anesthetic to establish a claim to accuracy will, if the case be an impaction, result in separating the fragments, establishing a positive diagnosis, and rendering the patient a hundredfold worse off for a professional opinion.

There is no necessity for a snap diagnosis in injuries to the hip-joint or the neck of the femur. A few days will not inure to the disadvantage of the patient, and in the early days following the injury the physician can advantageously observe and study his case. In injuries of this kind the modern hospital has one marked advantage over the most favored in private life, in that the surgeon can employ the *x*-ray in establishing a diagnosis.

The Non-surgical Treatment of Fracture of the Neck of the Femur.—If there is pronounced shortening with eversion the evidence of complete separation of the fragments is conclusive. Under such circumstances, and especially in the young and middle-aged, extension is generally practiced by means of adhesive plaster, pulley, and weights. Theoretically the Lorenz position for treatment of congenital hip-joint dislocation after reduction possesses very much in its favor, and were it practicable would, I am persuaded, give better results than the extended treatment; but in the adult, in the large and fat, this flexed and abducted position would often be intolerable.

If there is little deformity the probability is that there is impaction, and this is a valuable asset in favor of the patient's recovery. But, it will be asked, if the case is one of severe bruise shall the patient be treated the same as for fracture? The degree of pain and helplessness will decide the course of treatment. Absolute rest with the thigh bent a little at the knee and resting on a pillow will be as comforting to the one as the other, and if the *severe* bruise is decidedly better in three days there has been no harm done. If, on the contrary, at the end of three days or a week there has been no diminution of the pain and no gain in function, then the diagnosis of fracture is being borne out in treatment. In the majority of fractures of the neck of the femur—and in all the cases when the injury occurs to the old and feeble—the rule to make the patient as comfortable as possible is the best and safest rule to follow. Make your patient comfortable! Often a pelvic cincture pinned with moderate firmness will add to the comfort. A roll of cloth or a bag of bran placed beneath the *under* sheet and on the outer side of the pelvis and entire limb will be comforting. The fact that the bowels require daily and the bladder frequent attention makes it impossible to formulate rigid rules for dressing this class of cases; and the still farther fact that the aged and infirm readily acquire bed-sores after such injuries tells us that fixed recumbency is impracticable.

The general practitioner, who is most frequently called upon to treat this variety of injury, has noticed a great discrepancy in the results of his cases. Some have recovered with useful limbs, and others have been pitiable sufferers and hopelessly crippled. This experience is not peculiar to the general practitioner; it is common to those who have the best hospital appliances.

In some cases the entire thigh will swell to almost cartilaginous hardness, or a scleroderma supervene that is both painful and irremediable; in other cases persistent pain, like a chronic synovitis, though with more of the pathological condition dependent upon an inflammation of the joint. In some instances osteophytes will render the least motion painful. The most diverse results have occurred in my own hands, and where I have directed the entire treatment. In two cases of paralysis agitans, both females and advanced in years, the one recovered and walked up and down stairs, though with a limp, while the other never left her bed, and was a constant sufferer for many years before her death. The best results I have ever had have been in cases in which I have never "set" the fracture, and in which the most gentle measures and the most strenuous care not to increase the traumatism have been persisted in throughout the treatment.

In treating the aged, who are especially prone to weak and dribbling bladders, the greatest care must be exercised to avoid bed-sores. Cases of this kind stand as much in need of a faithful, skilled, and patient nurse as any case of appendicitis or typhoid fever. The draw sheet must be renewed whenever soiled, and the patient's dorsal position relieved. It is perfectly feasible, for temporary relief, to turn the patient on the side of the uninjured limb, propping him in this position with pillows behind the back, or turning so far that even pillows will not be required. Under these circumstances a pillow should be placed between the knees. Such a daily change, beginning with the onset of the injury, will be a great comfort to the patient and a safeguard against pressure sores. If the patient has been accustomed to a feather bed I do not change it, especially if in advanced years. It is a good rule, often applicable in this class of cases, to treat the patient and make the fracture a secondary consideration. Experience has formulated this rule. Many an enthusiast has put his patient up in the most approved style, only to find him flagging from rigid and inflexible confinement, and has been obliged to remove it when its only *advantage* (?) has been a superadded affliction in the shape of a bed-sore. In the very aged the shock is sufficient to bring life to a close, and death not infrequently supervenes within a week of the injury.

If the injury has been crippling, the pain and helplessness severe, the patient will often be the gainer by a change from the bed to a chair; and encouraged by the ability to move with a little assistance in bed, and about the house with crutches, some have persuaded themselves that the neck of the femur has not been broken, and have attempted to use it, when all of a sudden shortening and complete helplessness have taken place. There are too many cases of this kind, recorded and unrecorded, to be passed without serious consideration. The continued pain and helplessness, the aggravation of the pain at any attempt to bear weight upon the limb, are warnings that should be heeded. They make eloquent appeals for patience and time for recovery. If after three months a patient suffering from such an injury can walk comfortably with the assistance of crutches or a cane the prognosis for a useful limb is favorable.

I must close with repeating what I have already said: it is possible to make a diagnosis of injuries of the hip without increasing the gravity of the injury; it is possible to change the position of the patient from dorsal recumbency to the side daily; it is possible to avoid bed-sores; it is possible to get the patient out of bed into a comfortable chair in the early progress of the treatment; and it is possible under all these circumstances, and without arbitrary and confining apparatus, to have excellent results.

THE TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR.

By William J. Taylor, M.D., Philadelphia,
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The results following fractures of the neck of the femur have been so unsatisfactory under the older methods of treatment by extension with a weight and pulley, and the application of sand-bags to the limbs, that a short account of a few of the newer methods will be interesting, and if they are followed will give infinitely better results.

The old classification of intracapsular and extracapsular fracture can no longer be accepted, as it is impossible to distinguish between these two conditions, and the general term of fracture of the neck of the femur should be employed. Most of the older writers and teachers maintain that union never takes place in the injury, and, indeed, many of the modern writers offer little or no encouragement. Senn has shown that many, if not most, of the reasons usually advanced for non-union are wrong, and that it is our inability to obtain contact and immobilization of the fragments during the time necessary to healing of the fracture that accounts for most of the cases of non-union. If the ends of the broken bone can be kept in contact and maintained so, union will usually take place, for the head of the bone has ample circulation, and it practically never becomes necrotic, as it would if all blood-supply were lost.

The old method of treatment by exten-

sion and counter-extension with weight and pulley to the leg, and sand-bags to the thigh, has always been most unsatisfactory; for while it relieves the muscular spasm, it does not permit the ends of the fractured bone to be brought in contact, nor does it hold the fragments in close apposition during the process of repair. It is just as important in this as in all other fractures to get immobilization of the fragments.

This injury is much more common in children and in young and vigorous adults than is usually supposed, and follows, almost always, a fall upon the hip; in children it is frequently of the green-stick variety, the outer fragment forced upward and the inner one downward. As a rule it is easy to recognize the nature of the injury, but at times this may be difficult, as the amount of disability and shortening of the limb immediately after the accident is often very slight. A radiograph will clear up any doubt as to the accuracy of the diagnosis. Elderly people may, of course, die directly from shock within two or three days or of pneumonia within a week of the injury, but this is not usual; and unless the patient is extremely feeble and the resisting power of the individual poor, an effort should be made to obtain union of the broken bone.

The assertion that is so often made that in this injury the patient should be treated and the fracture itself disregarded is a wrong view to take. It is a well known fact that the bones of the aged unite quite as readily as those of young persons, and we should therefore make every effort to secure this in all fractures of the neck of the femur, and should only cease our efforts when it is seen that the general health of the patient is being seriously interfered with.

If there be impaction of the fragments and comparatively little shortening and eversion of the foot in elderly persons, great care should be taken to prevent separation of the fragments, for as Scudder very justly says, "impacted fractures will, and unimpacted fractures may, unite." In a case under the care of the writer, the patient, a frail old woman of eighty-two, recovered from an impacted fracture of the neck of the femur, with perfect use of the limbs, and although there is shortening, she is now very active—after four years, and at the age of eighty-six. Another very feeble old woman of eighty-four, who was suffering from paralysis agitans, fractured the neck of her femur, but made a most satisfactory recovery, and lived for several years afterward. In young persons and those of greater age, but of vigorous health, an anesthetic should be administered and the deformity reduced. We never permit impaction and its resulting deformity in other bones, and we should not do so in this; the deformity should be reduced by pulling upon the thigh until the shortening of the limb is overcome. An extension apparatus of adhesive plaster is then to be applied to the leg and thigh, to which a weight should be attached. Over this a spica bandage of plaster of Paris should be placed, extending from the armpit down to the middle of the leg, and the thigh should be abducted to bring together the ends of the broken bone. If the limb is brought down straight there is great danger of overriding of the fragments, and a portion of the capsule and other tissues may fall in between the fragments.

Children should also be placed upon a Bradford bed frame of gas-pipe and securely tied to it to keep them quiet.

Dr. T. J. Maxwell describes a method of obtaining apposition of the fragments, by which he is able to secure bony union in the majority of his cases. This is so simple, and yet so satisfactory, that it should be tried in all cases of elderly people, particularly. He first anesthetizes the patient and flexes the thigh upon the body, at the same time lifting it up, as in this way the tendons of the psoas and iliacus muscles are kept away from the seat of fracture and the soft tissues prevented from being pushed in between the fragments. As extension is kept up the limb is brought down to its normal position, but slighty abducted, and an ordinary extension of adhesive plaster applied, to which is attached a weight of from 15 to 25 pounds. The foot of the bed must, of course, be raised 8 or 10 inches to secure counter-extension. A splint of binders' board or of felt is then fitted to the inner and under side of the thigh to protect it, and another weight and pulley attachment is secured to this, the upper portion of the thigh, to act as a side pull, and this passes over a pulley

fastened to the side of the bed, which is elevated so that the traction overcomes the outward rotation of the limb. This should be about 10 pounds. This side traction is of prime importance, as it lifts the long fragment upward and outward into place, and by making the capsular ligament taut, forces the short fragment into place. This latter is attached only by the ligamentum teres at its apex, and cannot get out of place so long as it and the capsule are kept on a stretch. As Dr. J. E. Moore describes it, the capsule hugs it closely like a coat sleeve. The direction of the side pull upward and outward is secured by this elevation of the pulley, and is best effected by a wide strip of gauze or a towel encircling the limb and outside of the splint of binders' board or felt. The side of the bed next to the fracture should be elevated about four or five inches to secure counter-extension to the lateral traction by the weight of the patient's body.

This is a method of treatment so simple, and yet so satisfactory in its results, that it should be employed much more extensively than has been done; and even in very elderly people it has accomplished most excellent results.

The Thomas hip-splint is also a very good method of treatment of this injury, but one must be familiar with its application. It secures apposition of the fragments and immobilization, but it is often very difficult to fit it comfortably to the patient, particularly by the surgeon and general practitioner, who is not accustomed to the fitting of orthopedic apparatus.

The immobilization of the joint should be kept up for at least eight weeks, and no weight be permitted upon the limb for twelve weeks. It is not, however, necessary to keep the patient in bed all of this time, but with a well fitting plaster bandage they can be out and about on crutches in about eight weeks.

Dr. Royal Whitman has written extensively upon the subject of fracture of the neck of the femur in children, as well as separation of the epiphysis and the production of coxa vara. Epiphyseal separation is not nearly so common as has frequently been stated. When sudden violence is applied to the upper extremity of the femur, the neck of the bone, which is the weaker part, is much more liable to fracture than to separation at the epiphyseal junction. In coxa vara the neck of the bone is depressed forward with some outward rotation, and its traumatic form is almost always due to fracture of the neck of the femur, either complete or partial. This produces a deformity which is frequently mistaken for hip disease, as there may be shortening of the limb, caused by the elevated and prominent trochanter, one of the earliest symptoms, whereas in ordinary hip-joint disease this shortening always occurs later.

Should there be failure to secure bony union of the fragments within a reasonable time, operative treatment should be resorted to, and its success is often beyond all expectation. The age of the patient, the individual's power of resistance, and the amount of disability produced by the injury should be carefully considered, as very advanced age, a general want of vigor, and serious diseases of any of the organs of the body should be counter-indications, and particularly chronic or acute degeneration of the kidneys.

At times the fracture in young people may not be complete, and the upper portion of the capsule has been known to fill in the bony gap between the fragments, and of course prevent union. The incision is best made over the anterior aspect of the hip-joint. This gives good access to the seat of fracture, no vessels are divided, and the tissues are easily separated.

All of the interposed connective tissue must be thoroughly removed from between the ends of the bone, and this is frequently very difficult. The tissue is tough and must be cut away with the scissors, and then the surfaces of the bone scraped with a curette. There is always troublesome oozing, but this may be checked by sponge pressure. The fixation of the fragments, which is so essential to a satisfactory result, may be difficult, and it is essential that the trochanter be supported from behind, as there is always a tendency to displacement of the fragments and outward rotation of the limb. Direct fixation of the fragments may be accomplished by nails, screws, bone or ivory pegs, which are better inserted through a small separate opening over the external surface of the trochan-

ter. The ends of the bone are often so extremely soft that they do not hold the nail or screw, and it is practically unnecessary to drill a hole through the bone before they are inserted.

Parkhill's clamp, while theoretically very good, is practically difficult of application and will not hold in this softened bone. The majority of operators say that the patient must be in bed at least ten weeks, and I do not think it is safe to permit them to get up any earlier, although after eight weeks the actual fixation apparatus may be left off.

Why certain of these fractures of the neck of the femur should produce intense pain and others little or no pain is a mystery, unless it be that in those who suffer pain a portion of the capsule or soft tissues is interposed between the ends of the fragments, thus producing a violent inflammation.

Gillette and Boeckman[1] describe a very ingenious operation, but one which seems to me unnecessarily severe. It consists in making a large horseshoe flap over the greater trochanter, exposing the bone, and with a chain-saw cutting through the thigh bone just below the trochanter; then turning it upward together with its muscular attachments. This gives free access to the seat of the injury, and after the ends of the fragments are freshened they are brought together and held in place by a peg of bone.

While this method certainly gives a much wider field of operation, there is danger of non-union of the second fracture made by the chain-saw, and the possibility of necrosis of the whole of that portion of the bone.

The results obtained following the treatment by operation are very encouraging. The bones unite, there is good motion and satisfactory function, but there is always shortening of the limb, and this may amount to as much as an inch and a half.

The operative treatment in badly neglected cases should always be undertaken, and its success is often beyond all expectation. Thompson considers that it should be placed among the radical cures for troublesome conditions, but a successful outcome can only be expected in the hands of experienced surgeons.

[1]Trans. Am. Orthopedic Ass'n, vol. xi, p. 241.

THE USE OF CALOMEL IN THE TREATMENT OF ECLAMPSIA.[1]

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Recent investigation has brought us somewhat nearer the solution of the causes of eclampsia. It is not the purpose of this paper, however, to dwell upon this phase of the subject. The question is sufficiently complex to make it more profitable to consider the results that may be hoped for by following a given line of treatment.

Although the eclamptic stage is but the crisis in a morbid condition, it is the treatment of this stage of development in the toxemia, rather than that of the period of albuminuria, that we desire to treat of. The study which has been given the subject has been productive of two important facts. One is that the syncytial cells produce within the maternal organism either a direct poison, or one which is the result of an improper neutralization of their presence in the blood. The other is that the liver and kidneys, in the presence of the eclamptogenic poison, are both abnormally affected: the first in its capacity for the conversion of the waste products of metabolism, the latter in their ability to eliminate the toxic elements in the blood.

Irritation of the kidneys begins early in pregnancy, and imposes a task upon the renal epithelium that makes the balance between the production of toxin and the compensatory elimination extremely precarious. As pregnancy advances and the burden of eliminating the further products of improper metabolism is added to the kidneys the tax becomes too great, and eclampsia is the result.

As to the liver, its function goes hand in hand with that of the kidneys in relieving the organism of excrementitious matter. When it is equal to the requirements of the work imposed upon it the kidneys are relieved of any extra task. When, on the other hand, the toxic ingredients of the blood remain unaffected by the converting function of the liver, it becomes necessary for them to be filtered out by the kidneys. The result is

[1]Read before the Philadelphia County Medical Society, Feb. 14, 1906.

shown not necessarily in a nephritis with uremia, but in the effect upon the nervous system of a poison which is produced with such rapidity that the kidneys have not the capacity to eliminate it. This distinction should be carefully held in view in order to distinguish between uremia and toxemia.

Distinct anatomical lesions in the liver consist in the presence of necrotic areas the result of thrombosis. These no doubt are characteristic, just as ecchymoses are characteristic of purpura, but although they are more or less constant, it has not been demonstrated that they have a causal relationship to the development of eclampsia.

The familiar evidences of the oxidation in the liver of albuminous substances, resulting in the production of urea, may here be cited:

1. The presence of urea in the blood of the hepatic veins which convey the blood from the liver.

2. By the abstraction of urea from the liver tissues after life.

3. By the relationship between the quantity of urea found in the urine and the activity in the function of the liver.

Outside of the converting function of the liver, resulting in the production of urea, it is necessary to take into consideration the depurative and antiseptic action of the bile. It has been demonstrated that certain chemical poisons are carried off by the bile; by analogy we may believe that by the free establishment of the flow of bile the liver may partake of the general eliminative process in the presence of the poison of eclampsia. As to the antiseptic action of the bile, there is no doubt that it is of the first importance in the presence of the intestinal fermentation which is present in many cases of threatened eclampsia, or which, indeed, may be considered as a secondary factor in beginning toxemia. Wm. S. Stone (*Medical Record,* vol. 68, No. 8) has noted the presence of indican in the urine of a group of cases presenting, first, pernicious vomiting of pregnancy; secondly, preëclamptic symptoms. His contention is that while these clinical manifestations are diverse they are in reality due to identical toxins. He further believes that the presence of indican in the urine, although indicative of proteid decomposition, shows also a disturbance of the hepatic function, for in the cases in which it is found there is a disturbance of the normal ratios of the different forms of urinary nitrogen, together with a diminution in the total nitrogen, the result of improper conversion in the liver of the nitrogen waste. This may not underlie the toxemia, but it undoubtedly contributes to its effect.

Catharsis has played a conspicuous part in the treatment of eclampsia. By this means not only has elimination been favored, but the function of the liver stimulated. In view of this it is surprising that calomel has not been more fully resorted to. Cathartic doses, to be sure, as an adjunct to treatment, have been used. It is not likely, though, that such doses go very far in eliminating the eclamptogenic poison. Larger purgative doses of calomel, on the other hand, probably carry off, as far as its action on the liver is concerned, the toxic ingredients in the blood, first, through its hydragogue action; secondly, through increase in the flow of bile.

The use of calomel as a purgative has rather overshadowed its use as a diuretic. The latter effect is perhaps more definitely seen in acute nephritis, where, in the absence of destruction of the epithelium of the tubules, it has a directly stimulating action. Calomel also affects the circulation of the kidney. Physiological experiments have demonstrated the fact that a solution of an organic combination of mercury in the blood will, in the absence of any interruption in the blood current in the kidney, almost double the rapidity of the circulation (Hans Heuck, Dissertation, Rostock, 1889). The observations of Heuck and Bieganski (*Deutsches Arch. f. klin. Med.,* 1888, Bd. 43) in connection with the use of calomel in chronic nephritis may prove interesting in illustrating its action. They have noted in parenchymatous nephritis a lessening of diuresis in the beginning of administration, then on the third or fourth day a paroxysmal polyuria. In cases like the above, continued doses of calomel do not increase the output of urine beyond what has been demonstrated as the maximum effect early in administration. In certain cases enough calomel may not be absorbed to exert any influence upon excretion. This may account for its indifferent effect in

late administration in eclampsia. Likewise the tubules may be blocked by excessive exudate, which would also account for absence in effect. In cases of this character the failure in action is to be accounted for in this way rather than in deficient activity of the excretory cells. The latter in certain cases begin to secrete after the administration of other drugs, such as caffeine, as noted in one of Heuck's cases. This would account for irregularity in action of calomel in a certain group of cases.

The fact remains, however, that calomel is of great practical value as a diuretic, as shown by the researches of Jendrassik (*Deutsches Arch. f. klin. Med.*, 1886, xxxviii, 356), Wood (Therapeutics: Its Principles and Practice, 11th ed., Philadelphia, 1900), Heuck (see above), and others. No doubt the calomel in combination with squill and digitalis enhances the diuretic effect of the pill which is so successfully used to reduce the anasarca of chronic cardiac disease.

The effect of calomel will be observed in the following cases in which the drug was used:

Case I.—Hospital case, November, 1895; II-para; recovery. Patient entered in labor. Previous labor had been uneventful. Anasarca, amblyopia, 50 per cent vol. albumin. Initial laxative dose of calomel. Convulsion occurred during first stage; blindness, followed by coma. Delivery of living child by forceps; second convulsion during delivery. Free bleeding from cervical tear. Calomel gr. x immediately after delivery. No further convulsions; quantity of urine normal in less than forty-eight hours after delivery. Sedative, chloral. No salivation.

Case II.—Mrs. D. B., May, 1889; I-para; recovery. Previous history normal, with the exception of a slight trace of albumin in the urine. On the third day preceding delivery edema of the lower extremities together with suppression of urine suddenly made its appearance. Milk diet, catharsis. Spontaneous delivery. A serious convulsion four hours after delivery. Calomel to the amount of gr. xx was given in two-grain doses frequently repeated. Within seventy-two hours from the beginning of this treatment the urine had increased to 100 ounces daily. Sedative, chloral. Purgation; no salivation.

Case III.—Hospital case, December, 1902; I-para; recovery. Patient entered in labor. First stage, ten hours; second stage, one hour. First convulsion occurred during third stage. There were eleven convulsions in all. The patient in a state of restlessness and partial coma in the intervals. Initial dose of calomel gr. iij; gr. xiv within thirty hours. Fourteen ounces of urine were excreted in the first twenty-four hours beginning with the accession of labor. Ninety ounces were excreted in the following twenty-four hours. Sedatives, morphine and chloral. Venesection. No salivation.

Case IV.—Mrs. H., May, 1903; I-para; recovery. Apparently normal pregnancy; urinalysis not recorded by physician in attendance. Severe convulsion occurring after third stage. Less than two ounces of urine obtained by catheter. Almost total deposit of albumin on boiling. More or less active bleeding occurred from periurethral lacerations. This was purposely not controlled. The temperature following convulsion was 100.4°. Calomel gr. xx was administered after the convulsion. No further convulsion; slight fever. Ninety-six ounces of urine were secreted within thirty-six hours. No sedative was administered. Purgation; no salivation.

Case V.—October, 1904. Hospital case; VI-para; recovery. Patient admitted in labor with slight dilatation. Three convulsions after admission. Manual dilatation under chloroform was performed, followed by podalic version and extraction. Following delivery two convulsions occurred, with increasing coma, which began after first postpartum seizure. After an interval of three days another convulsion occurred, making a total of eight convulsions.

Urinalysis: Day of delivery: Urea .3 per cent; albumin, 4 grammes per 1000 Cc. Day following delivery: Urea, .9 per cent; albumin, 2.5 grammes; hyaline and granular casts. Third day following delivery: Urea, .7 per cent; albumin, .5 gramme. Amount: During first twenty-four hours following admission, 20 ounces; during fourth day, 45 ounces; during fifth day, 70 ounces.

Albumin in reduced quantity and casts

persisting at date of discharge. Purgation; no salivation.

CASE VI.—November, 1905. Hospital case; I-para in the beginning of her eighth month of gestation; death; history of alcoholism. The patient was admitted in coma following three convulsions. Temperature, 99.8°; pulse, 120. Accentuation of the second aortic sound. Pupils contracted; edema. The head had engaged, but had driven the undilated cervix in advance. A Voorhees bag was introduced and distended with 250 Cc. of carbolic solution. The fourth convulsion occurred with the accession of labor pains. The bag was expelled in eleven hours and labor promptly terminated, but not until a fifth convulsion had occurred. The patient had partially regained consciousness in the interval between her admission and the completion of labor. Ten hours after delivery she again sank into coma. Pulmonary edema developed, and she died thirty hours after delivery.

Thirty-five grains of calomel were given in doses of five and ten grains. On admission six ounces of urine was withdrawn by catheter. The total amount of urine secreted during forty-eight hours amounted to twenty-one ounces.

Slightly less than a grain of morphine was administered, in doses of an eighth to one-quarter of a grain. Atropine and strychnine were added later.

It is interesting to note that in a carefully tested catheterized specimen taken immediately following admission two per cent of urea was found. By Esbach's test the albumin amounted to ten grammes. The specific gravity was 1020.

It appears that we have had to deal in this case with a chronic nephritis. Evidently the patient's habits had affected her kidneys, and the readiness with which she yielded to the narcotic effects of morphine would naturally have suggested a different sedative had we been more fully alive to her kidney condition. However this may be, her case was one of those in which calomel is ineffective, most likely from its non-absorption, as its administration at no time resulted in any apparent effect. In other words, it was not a question of too much calomel or a maximum point in its effect, as its employment was followed by no effect, not even that of its cathartic action.

Calomel should be energetically administered, both in the preëclamptic stage and in the stage of convulsions. In the first instance the outlook is so threatening that the time in which therapeusis can be carried out is limited. An initial dose of ten grains followed in four to six hours by an equal dose may be indicated. We may be guided in judging its effect by increase in the urinary secretion and reduction in specific gravity. The fact as to whether the dosage is followed by diarrhea is more or less secondary.

In the convulsive stage an initial dose of twenty grains, followed by half this amount in the intervals between convulsions as the opportunity arises, or in accordance with the ability of the patient to swallow, is indicated. If the patient is somnolent, or if the convulsions follow each other in quick succession, it would be necessary to take advantage of the first opportunity available to administer the maximum dose, say twenty-five grains. In cases in which a preëxisting kidney lesion is present, in deference to the theoretical objection that the degenerated epithelium is in no condition to respond to irritation, smaller doses may be more frequently given—two grains every six hours. Heuck puts forward the objection to the use of calomel that in acute conditions, owing to the blocking of the tubules by desquamative débris, the output of urine is interfered with. Although from a practical point of view this may not stand as a valid objection, yet it appears in some such cases that the postponement of the diuretic effect of calomel, as shown for example in an initial decrease in excretion, may be accounted for in this way.

In cases that present no history of previous kidney trouble the drug *par excellence* for controlling convulsions is morphine. Happily the use of calomel prevents certain of the undesirable effects of morphine, although the primary object in the use of the latter is to control convulsions, and where this is accomplished the disadvantages of the drug may be disregarded. *Vice versa,* the use of morphine, especially when combined with atropine, combats the disadvantageous effects of calomel, such as salivation and excessive diarrhea.

1709 SPRUCE STREET.

ETIOLOGY AND TREATMENT OF MASTOIDITIS.[1]

By S. MacCuen Smith, M.D.,
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The early recognition and prompt treatment of acute inflammatory diseases of the organ of hearing is one of the most important duties devolving on every practitioner of medicine. The ignorance of the laity in the most fundamental rules governing the care of their own ears, and especially those of their children, is not surprising when we recall the empiricism that has surrounded the organ of hearing and its treatment throughout the history of medicine. It comes within the power of this and similar societies to end effectually the prevailing gross ignorance of the most simple methods for taking care of the ear, and to relegate to obscurity such dangerous terms as "It is only an earache," or "'Tis but a running ear, which the child will outgrow."

Mastoiditis has its origin, in the vast majority of cases, from an acute suppurative otitis media, the infection reaching the middle ear by way of the Eustachian tube. It may also arise from trauma or through the blood or lymph-channels, but such cases are infrequent. On account of the direct relation of the middle ear with the mastoid cells, and owing to the fact that the mucous membrane lining the cells is but a continuation of that which lines the cavity of the middle ear, it seems remarkable that we do not see even more cases of mastoid involvement from an acute otitis media—as indeed we would, had not nature generously provided in the majority of cases a membrana tympani which ruptures from the pressure of fluid behind it, before that fluid, by ever increasing pressure, reaches the cavity of the mastoid process. Despite this fact, we frequently see cases of otitis media in which the drum has ruptured, providing drainage for the purulent matter, yet the mastoid cells become involved; in such cases the infection has traveled by continuity of structure to the cells. It is, then, in the prompt recognition and early treatment of the initial otitis media that we may hope to prevent subsequent mastoid involvement.

[1]Read before the Gloucester County Medical Society, Woodbury, N. J., Nov. 5, 1905.

The writer has been so frequently impressed with the similarity existing between appendicitis and mastoiditis that an analogy used in a former article is herewith reproduced:

"In some important respects mastoiditis bears a striking resemblance to appendicitis, and their respective complications are likewise similar. In the latter we find a blind sac within the abdominal cavity extending from the intestinal tract, surrounded by important viscera and especially prone to infection from fecal matter; in mastoiditis we have a blind cavern communicating by way of the tympanic cavity and Eustachian tube with the nasopharynx, through which it is especially liable to become infected. The mastoid and tympanic cavities are likewise bounded on all sides by most important vital structures. In former years thousands lost their lives from peritonitis, the exact cause, appendicitis, not being known or appreciated by the profession. Many thousands also have perished from meningitis and other intracranial complications, little suspecting the ear as the important etiologic factor.

It required years of endeavor and many exhaustive scientific papers to actually impress the significance of appendicitis and its complications upon the medical mind.

The professional attitude toward mastoiditis and its numerous vital complications was precisely similar.

Another point is equally true of both appendicitis and mastoiditis, namely, the absolute necessity of an early diagnosis, and, in suitable cases, an immediate operation. Then, again, the simile is striking and impressive from the fact that one attack of appendicitis is liable to be followed by another at an unknown interval; furthermore, the patient may survive the first attack and succumb to the second. In like manner the symptoms of mastoiditis frequently abate, only to recur at some future time; these secondary manifestations are, however, frequently obscure, and there may be an entire absence of classical symptoms, thus diverting attention from the ear, which nevertheless remains the exciting cause even though serious complications, such as meningitis or sinus thrombosis, have meanwhile developed.

It will not be denied that the prompt

and proper care of an acute catarrhal otitis media will, in the great majority of cases, prevent it progressing to the stage of suppuration; furthermore, should the case have already reached the stage of suppuration, this same prompt recognition and early care will in most instances arrest the progress of the disease and insure a prompt recovery without loss of function or other disability. Then, again, should the disease be purulent from its inception, immediate evacuation of the pus will effectually prevent many serious complications and subsequent loss of life.

Clearly to define the exact termination of an acute otitis media without suppuration, and the beginning of an acute suppurative inflammation of the tympanic cavity, is purely a supposition based on theoretical and not on practical knowledge; neither is the ending of an acute suppuration distinguishable from the beginning of a chronic discharge.

Some cases are doubtless purulent from the very inception of the disease, and may therefore be properly termed acute suppurative. On the other hand, it will not be denied that a great majority of all suppurative diseases of the tympanum are primarily catarrhal, but later become suppurative from sheer neglect, either on the part of the patient or attending physician. So long as the acute inflammation is confined to the stage of hyperemia and subsequent hypersecretion of the mucosa, it can be classed as the non-suppurative variety. If, however, the accumulating secretion remains for a time confined within the tympanic cavity, further pathological changes rapidly develop, overdistention and perforation of the membrana tympani occurs, and the case is then known as an acute suppurative one.

It is possible, therefore, to distinguish between an acute *catarrhal* and an acute *purulent* otitis media until the stage of perforation becomes manifest; hence the treatment to be applied during the hyperemic or acute stage is identical in each.

In the interest of effective treatment, however, it is important to distinguish as far as possible between an acute otitis media caused by an attack of coryza, or other mild forms of the disease, and that of the more virulent type occurring as a complication or sequela of one of the exanthemata, or from epidemic influenza or pneumonia. The former variety usually yields to the application of the most simple remedial agents if these are employed during the stage of congestion; while the latter are generally purulent in character and demand prompt and heroic measures for their relief.

In the opinion of the writer, the aural diseases complicating epidemic influenza and pneumonia, on account of their virulence and persistent tendency to cause necrotic changes, are probably more prone to produce intracranial lesions than an aural involvement complicating one of the exanthemata. The ravages of the bacillus of influenza and of the pneumococcus, after the acute symptoms have somewhat subsided, are so insidious that mastoid or intracranial involvement is in many cases actually well advanced before the complication is discovered, and this occurs notwithstanding the physical symptoms apparently denote marked improvement in the general condition.

In these cases a relapse takes place, and without presenting any aural symptoms whatever, death may take place during a violent convulsion, or, as was manifest in two cases seen by the writer last winter, death was preceded by a condition in which the Cheyne-Stokes respiration was most marked.

Recent bacteriological investigations demonstrate beyond question that the quantity, and especially the quality, of the discharge are all-important factors in considering the treatment and prognosis of individual cases. Generally speaking, a discharge without fetor has been considered harmless, and therefore in most cases has received little attention except for cosmetic purposes. It is a mistake to assume that the virulence of an aural discharge can be judged by its odor, or that the gravity of an otorrhea can be measured by its chronicity. An odorless discharge from the ear sometimes contains pathogenic micrococci, which may cause some of the most serious intracranial inflammatory lesions. The same observation is true in many cases of fetid otorrhea. Nevertheless, non-pathogenic cases are often seen, even though the fetor is extreme, clearly illustrating the value of the microscope and cultures in a differential diagnosis of cases of sup-

purative diseases of the tympanum. Such a demonstration of the presence of the bacillus of influenza or other infectious microörganisms is a practice to be recommended, and should be employed where at all practicable. Within a very short time, however, the discharge from the tympanic cavity is liable to develop a mixed infection, such as the staphylococcus, streptococcus, pneumococcus, etc., thus often supplanting the original germs present. To be of service, therefore, the examination must be made as soon as the pus has been evacuated, whether from a spontaneous rupture or after an incision of the membrana tympani.

The character of the general illness, of which the aural complication is but a local manifestation, will frequently aid us in determining the necessity for early surgical interference. If, therefore, the organ of hearing becomes involved during an attack of one of the exanthemata, epidemic influenza or pneumonia, the ear should frequently be examined and treated energetically. This is all the more important in the case of children, especially of infants, so many of whom have died from meningitis or other complications, while the underlying cause of their illness has been entirely overlooked.

Primarily, then, the most effectual method of treating an acute suppurative otitis media is by the adoption of preventive measures to arrest the disease at the stage of hyperemia, thereby preventing it from progressing to the point of suppuration. If, however, this is not accomplished, and the stage of suppuration has arrived, it is most unfortunate if, from tardiness or from ignorance or neglect, the membrana tympani is *allowed* to rupture spontaneously. It is equally to be regretted if the patient has been subjected to the ineffectual operation known as *paracentesis* of the membrana tympani, a procedure, to the mind of the writer, that has no useful place in aural surgery.

The old surgical axiom, "Wherever there is pus leave it out," is to-day quite as pregnant with truth as when first promulgated by the elder Gross. When the middle ear, as well as other cavities, is filled with pus, it must be thoroughly evacuated; this, however, can never be accomplished by a single *puncture*, paracentesis of the membrana tympani; the membrane must be *freely incised*, the chief requisite being to carry the incision from the most bulging point downward to the lower border of the canal, said incision to be carried either anteriorly or posteriorly to the long handle of the malleus until it describes one-sixth of a circle. This will not only provide for good drainage, but will insure the opening remaining patulous sufficiently long to admit of proper after-treatment.

There are two principal reasons, then, why so many cases of suppurative otitis media do not yield to treatment in the initial stage. In the first place, if the membrana tympani ruptures spontaneously, the opening thus formed is usually situated in the superior part of the membrane, which only allows the pus to escape by the process of overflow; furthermore, pressure sufficient to produce rupture frequently causes maceration and peeling off of the mucosa, and subsequent necrosis of the exposed osseous surface. Autoinfection, therefore, occurs on account of the cavity being constantly filled with pus up to the point of perforation. Again, the edges of the ruptured membrane are irregular, consequently they do not coapt readily, nor unite kindly; whereas a clean incision will always repair with the greatest facility. On the other hand, if only a puncture of the membrane is made, the opening is too small to provide for adequate drainage.

The logical measure, therefore, to be employed in the evacuation of pus from the tympanic cavities is, as above stated, a *free incision* of the membrana tympani, but never to commit the folly of a simple *puncture*. The practice of so-called *paracentesis* tympani is non-surgical so far as it relates to otology, and in order that the future may be free from the inefficient treatment this procedure has engendered in the past, the word, more especially its practice, should be dropped from aural literature.

In considering the treatment of an acute suppurative otitis media it must be assumed, therefore, that every effort has been made to arrest the progress of the disease before the formation of pus. If, however, pus formation has already taken place, there is of course nothing to do but to evacuate it in the manner above stated.

The classical indications for incising

the membrana tympani are in some cases as unreliable and misleading as the classical rules for operating on the mastoid. Generally speaking, it is well to wait until some bulging of the membrana tympani has occurred, but a grave error will have been committed if we wait for this physical sign in cases complicating the exanthemata, epidemic influenza or pneumonia. As many of these cases are purulent from the very inception of the disease, it is important that an early incision of the membrane should be made, even though bulging has not occurred. This is especially true if the pain is severe and unrelieved by bloodletting and other methods employed for its relief. Should the suffering continue for some time after thorough evacuation of the pus, and an examination show the presence of the streptococcus or bacillus of influenza in any considerable number, the patient's future health as well as conservative surgery will be best served by an immediate opening of the mastoid.

After the evacuation of the fluid from the tympanic cavity has been accomplished, a good recovery will be made in many cases by cleansing the canal and middle ear with an antiseptic solution, followed by introducing a strip of iodoform gauze well into the deep canal to provide for good drainage, this to be removed every day or two. It is well to keep in mind, however, that the two essential elements for the rapid development and multiplication of bacteria are heat and moisture. The treatment in many cases must therefore be directed to the avoidance or correction of these elements, as the site of suppurative otitis media is a veritable hot-bed for the propagation of disease germs.

Our chief object in such cases, then, is the application of therapeutic measures to rid the ear of these bacteria as far as possible by reducing the inflammatory heat and keeping the propagatory surface dry. After the secretions have been removed on the cotton-tipped probe, the ear should be gently dried with cotton or hot air and then dusted with an impalpable powder, such as one composed of equal parts of boric acid and aristol. Care must be taken to *dust* this powder, as the introduction of any quantity would favor the retention of pus by becoming impacted.

The general health must not be neglected. Absolute rest in bed with free diuresis and properly conducted diaphoresis are of first importance. The bowels should be freely opened and the diet restricted to milk and broth. Indeed, one or two days of absolute fasting and enforced rest in bed will frequently accomplish more in prophylaxis than any other single or combined therapeutic measure.

Should the case have progressed to acute involvement of the mastoid process when first seen by the physician, it becomes his duty to consider at once whether the operation of opening the mastoid is indicated. No absolute rules can be laid down for surgical intervention, this depending upon the peculiarities exhibited by a case of mastoiditis; however, it has been the writer's custom to place a set of indications before his classes each year, which, though by no means complete, may be of sufficient value to permit of their presentation here.

The simple or uncombined operation is indicated:

1. In all cases of acute otorrhea with pain, redness, swelling, and tenderness over the mastoid which refuse to yield in twenty-four hours to energetic antiphlogistic treatment.

2. In all cases in which the mastoid appears sound externally, but there is bulging or drooping of the superior and posterior wall of the external auditory canal, associated with a copious discharge and symptoms of brain irritation or pyemia.

3. In all cases of acute suppurative otitis media complicating the infectious diseases that do not yield to the usual methods of treatment, but which recurrently present symptoms of mastoid involvement.

4. In all cases of acute otorrhea with a persistent temperature, probably pyemic, and more or less pain in the ear, the only symptom of mastoid disease being the characteristic bulging or drooping of the canal.

The complete or combined operation is indicated:

1. In cases presenting a carious, fistulous opening in the cortical surface, complicating chronic otorrhea.

2. When cholesteatomatous masses are detected in a chronic discharge.

3. In dangerous retention of pus from

obstruction of the external auditory canal, such as exostosis or hyperostosis.

4. When a brownish-yellow, foul-smelling discharge persists and does not yield to other methods of treatment.

Drooping of the superior and posterior wall may be present in any of the above conditions, but it is absent if the disease is confined to the mastoid tip.

Abnormal conditions of the pulse and temperature are of no diagnostic value except in *acute* cases, with the single exception of intracranial involvement, complicating chronic otorrhea.

A NEW METHOD OF TREATMENT OF ACNE.

MOSCHCOWITZ makes a preliminary report on this method in the *Medical Record* of January 13, 1906.

The method consists in the application of the well known principle of Bier, in the treatment of inflammatory processes by inducing hyperemia. The value of hyperemia as a curative agent in acute suppurations was announced by Bier early this year, in the *Münchener medicinische Wochenschrift*, Nos. 5, 6, and 7, 1905. In his earlier efforts hyperemia was obtained by the use of the Martin bandage applied proximally to the inflammatory focus. More recently his assistant, Klapp, has demonstrated that a local hyperemia limited to the inflammatory process may be obtained by the use of various forms of dry cups; this is especially applicable in localized suppurations of the soft parts, such as circumscribed abscesses, phlegmons, carbuncles, furuncles, etc.

The advantages claimed by Bier and Klapp for this method of treatment are: (1) It is painless; (2) the pain due to inflammation is relieved very quickly; (3) no incisions, or at most very small incisions, are necessary; (4) the abscesses heal in one-third to one-half the ordinary time; (5) there is no scar formation; (6) the method is simple.

Influenced by the results that he had witnessed of the successful treatment of inflammations by hyperemia alone, and by the accumulating mass of evidence that has appeared since the publications of Bier and Klapp, which seems to confirm their observations, the author applied the method to the treatment of acne, a condition in which these methods have not, so far as he is aware, been suggested. Eight cases have thus far been treated, and the results in every case have been so good, compared with those obtained by the ordinary and well recognized methods in the treatment of this condition, that he has deemed it advisable to publish his results, even though he realizes that the number of cases thus far treated is still too few to warrant general conclusions being drawn. In many of these cases the acne had been treated for months, or even years, with discouraging results.

The method is very simple. An ordinary dry cup with rubber bulb attachment is used. The edge of the cup must be broad, and the diameter varies from three-quarters of an inch to one and one-half inches, depending upon the part of the face to which the cup is applied. The cup is applied to the affected area of the face for one hour every day, preferably in the evening. If the application is made twice a day, for an hour at a time, more rapid results will be obtained. The suction must be of the slightest character, so that the least pull will separate the cup from the skin. This point is emphasized for two reasons: first, because greater suction is not so efficient, and may even aggravate the condition; and secondly, because if more suction is employed a disagreeable ring may form, which takes a day or two to disappear. The cup must be removed every one or two minutes, and reapplied to permit of a new influx of blood. The applications are begun over that area of the face in which the acne pustules are most numerous, and are repeated daily over the same area until the pustules have disappeared. The cup is then shifted to another part of the face, and a similar course is pursued. This is repeated until the entire face has been treated. It takes from two to five applications over each area until a satisfactory result is obtained. It is needless to say that if two cups are used at the same time the duration of healing will be reduced one-half.

As far as can be determined, this method does not prevent the appearance of new pustules, although it has seemed that they relapse decidedly less frequently than before treatment was begun. As soon as a fresh pustule has appeared the cup must be reapplied, until it disappears. No other method of treatment was used in any of the eight cases.

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Leading Articles.

THE USE OF CITRATE OF SODIUM IN INFANT FEEDING.

We have more than once called attention in the columns of the GAZETTE to the recommendations made by Poynton in regard to the value of adding citrate of sodium to cow's milk when preparing that fluid for infant feeding. No less than twelve years ago Wright, of Netley, who has done such valuable work on the effect of the calcium salts in increasing the coagulability of the blood, published an article in which he suggested that decalcified milk might prove of advantage in the feeding of infants and invalids, and more recently, it will be remembered, he has suggested that a possible cause for the frequency of phlebitis as a complication of typhoid fever lies in the fact that by the ingestion of an excess of cow's milk, which, in turn, contains an excess of calcium salts, the coagulability of the blood is increased.

Our attention has been called to this matter once more by an interesting and valuable communication made to the *Archives of Pediatrics* for March, 1906, by Shaw, of Albany, N. Y. He has carried out a series of laboratory and clinical investigations which does much toward increasing our confidence in the value of citrate of sodium for the purpose that we have named. He states that there is no reason why citrate of potash could not be used clinically for the same purpose, but it is well to remember that the sodium base is much less depressing than the potassium base, and as full doses of these salts have to be given, the sodium citrate is therefore preferable. That the addition of the citrate of sodium results in the precipitation of insoluble citrate of calcium, and therefore renders the curd of the milk less firm and more flocculent, is a theory which is disproved by his investigations, for he found that even if large quantities of milk were treated with citrate of sodium, and careful chemical analysis was made, there was no evidence that this precipitation took place. He believes that some unknown or some undetected action or combination takes place between the sodium citrate and the calcium casein.

In Shaw's clinical experiments milk treated by means of citrate of soda was administered to twenty-two babies. Five of these failed to gain in weight, but the remaining seventeen gained in a most satisfactory manner, and two of the five, which are in his records as not having gained under this plan of feeding, ultimately gained steadily when it was persisted in. He found also that the addition of citrate of sodium to cow's milk was an exceedingly valuable method for the control of vomiting in cases of chronic gastric catarrh.

Shaw calls our attention to the fact that Variot and Guyader, of Paris, have also made confirmative reports upon this clinical observation, as has also Poynton in London. It is a noteworthy fact, however, that the use of sodium citrate only benefits those cases in which the gastric disturbance is caused by proteids. So far as the stools are concerned, it was found that undigested offensive stools might occur as before, but in no instance were tough, casein curds found in the stools. In Shaw's experiments percentage mixtures were not employed. Cow's milk was diluted in proportions varying from three parts of water and one of milk to

three parts of milk and one of water, and this water contained ordinary cane-sugar in a five-per-cent solution. To one of the mixtures so prepared a watery solution of citrate of sodium was added. This solution was of such a strength that each teaspoonful contained 10 grains, and it was added in such a proportion that there was one grain of citrate of sodium to each ounce of the milk in the bottle. Occasionally as much as 3 grains to each ounce was used. The milk was not pasteurized nor sterilized, and even when a strength of 3 grains of the citrate of sodium to the ounce of mixture was used, there was no taste, and the children took it readily. Shaw concludes that because of the ease of preparation, the simplicity of the method, and the cheapness of the ingredients, this plan affords a valuable method in cases of proteid ingestion, and strongly recommends that further trial be given.

THE USE OF QUININE IN PNEUMONIA.

During the past winter the *Journal of the American Medical Association* on several occasions has published communications in the form of original articles, or letters, in which certain practitioners have strongly recommended the employment of massive doses of quinine in the treatment of croupous pneumonia, and have recorded cases in which as much as 80 grains was given at once, and followed by 15 or 20 an hour later. In the issue of March 17, 1906, several communications of this character can be found, and an editorial notice of the recommendations of various writers is added. We are glad to see that in this editorial note the fact is pointed out that this use of quinine in massive doses is by no means new; furthermore, that its trial in previous years by competent observers has definitely proved that it is by no means a specific in this disease. As we have repeatedly pointed out, there is no malady in the treatment of which the physician is justified in claiming that he has discovered a specific remedy until a very large number of cases, of exactly the same character, have been similarly treated. It is quite proper for a physician to form an opinion or to get a mental impression that a remedy serves him well in the treatment of a certain case of disease, but his conclusions do not rest upon a firm basis until several hundred cases have given excellent results. This holds true with peculiar force in regard to pneumonia, than which there is no disease which varies so greatly in its manifestations and mortality. Not only does the mortality-rate vary from almost nothing in childhood to nearly 100 per cent in old age, but it varies to an extraordinary degree in what may be called the normal vital resistance of the individual, and still more widely if this vital resistance has been impaired by recent or old excesses, or if the kidneys and heart are already involved in some acute or chronic pathological process. Further than this, climatic conditions exercise a remarkable influence upon the mortality of the disease, so that it is often the case that pneumonia in high altitudes is a most virulent disease, whereas in some low altitudes it is comparatively mild. Again, a good deal depends upon the virulence of the infecting microörganism in an individual instance. It is well known to bacteriologists that the pneumococcus varies to an extraordinary degree in its virulence and in its vitality. It becomes evident, therefore, that no one plan of treatment can be a specific in this malady unless we are fortunate enough to discover some plan which finds its basis in serum therapy, which so far has failed completely in the hands of most practitioners. In instances in which the kidneys are seriously impaired, we cannot help feeling that the administration of these massive doses of quinine must be followed by evil effects, as quinine, in very large doses, is capable of irritating the kidneys, particularly if they are impaired. Again, in those cases of pneumonia in which cerebral and meningeal symptoms are marked, such doses of quinine would certainly be contraindicated, and we believe that, when the heart is feeble, doses of quinine, such as we have named, are quite capable of gravely increasing cardiac weakness.

It is interesting to note that more than thirty years ago Jürgensen used such doses of quinine in pneumonia for antipyretic purposes, and it is still more interesting to note that his mortality varied between 10 and 20 per cent, a mortality which is frequently met with by practitioners who use other plans of treatment.

Finally, it must be recognized that cases of pneumonia in many instances recover if they have no better treatment than rest in bed with proper feeding and good nursing, that others are doomed from the moment the disease commences, and that still others often need active stimulation and support if they are to survive. We cannot, however, indorse the opinion expressed by the editorial quoted in its closing sentence, which reads to the effect that the great majority of patients with pneumonia under the age of fifty or sixty will recover under any plan of treatment if it be not harmful. Surely the writer of this editorial must have had an extraordinarily fortunate experience with this disease to reach such an optimistic conclusion. Most practitioners have had an experience of a very different character at this time of life.

MILK FROM TUBERCULOUS ANIMALS AND ITS INFLUENCE UPON THE HEALTH OF HUMAN BEINGS.

It is a well known fact that for a number of years an earnest discussion has been carried on by prominent bacteriologists and sanitarians as to the identity of bovine and human tuberculosis, and as to whether it is possible for the bacillus as it occurs in cattle to be transmitted to man and produce tuberculosis in its new host. Most of the evidence which has been presented within the last few years indicates that while there is a difference between the tubercle bacillus affecting the lower animals and that which affects man, the bovine bacillus is nevertheless quite capable of finding lodgment in and producing disease in human beings.

In a paper published in the *Boston Medical and Surgical Journal* of January 18, 1906, Theobald Smith points out that the bovine bacillus has been found almost exclusively in children under ten years of age, and that pulmonary tuberculosis, and other forms of tuberculosis in adults, are almost wholly human in origin. The fact that children can be infected from tuberculous milk renders it essential that cattle shall be carefully examined to determine as to their health, and that they should be tested with tuberculin in order that any possible presence of tuberculosis may be excluded. Those animals which react to tuberculin should be destroyed, or at least their milk should not be fed to infants. Theobald Smith points out that while it is highly probable that most of us can resist an occasional tubercle bacillus in food, it is quite possible that at times our resistance may give way, particularly if the number of bacilli is very large.

ARTIFICIAL RESPIRATION IN ACUTE OPIUM POISONING.

With the methods of treating acute opium poisoning every reader of the GAZETTE is undoubtedly familiar. Atropine no longer has the reputation which it once held as a physiological antidote, but strychnine, external heat, strong black coffee, the use of the stomach pump, and artificial respiration are, of course, the means which are commonly resorted to at the present time with the best results. Oxygen inhalations are often of some value, and permanganate of potassium as a chemical antidote is, of course, advisable.

The point to which we wish to call especial attention at this time is concerning the value of artificial respiration in opium poisoning. Without doubt severe cases of acute opium poisoning die through failure of the respiratory center and the inability on the part of the physician by means of the Sylvester method of artificial respiration to maintain a sufficient interchange of air and carbonic dioxide in the lungs to permit life to be continued. Some years ago Dr. Fell, of Buffalo, N. Y., advocated the use of bellows to supply air to persons who suffered from respiratory failure during the use of ether or chloroform, and by means of O'Dwyer's laryngeal tube it was found that the physician could readily inflate the lungs of a patient and so carry on true artificial respiration without any aid whatever from the respiratory center. The great difficulty with the employment of this method of treatment is that the average physician does not see a sufficient number of cases of opium poisoning to justify him in the expense of obtaining Fell's apparatus, but hospitals should undoubtedly be provided with it, as by its use life can be saved which would otherwise surely be lost.

Our attention has been called to this matter once more by an interesting contribution to the *China Medical Missionary Journal* for November, 1905, which has just been received, in which Dr. Cochran reports the use of this method of treating opium poisoning in a number of cases, and points out how difficult it is for a physician to be able to maintain the Sylvester method long enough and thoroughly enough to maintain life. The cases which he reports took large quantities of the drug. One took 2 drachms of opium paste such as is used in smoking a pipe; another took 12 drachms of the same paste; a third took a large amount of it. In two of these cases recovery took place, even the patient who took 12 drachms of the paste recovering. None of these cases were habitual users of the drug.

PERMANGANATE OF POTASSIUM AS A REMEDY IN SNAKE-BITE.

In the issue of the THERAPEUTIC GAZETTE for June, 1905, we called attention to an article by Captain Rodgers, of the Indian Medical Service, published in the *Indian Medical Gazette* of Calcutta for February, 1905, in which he strongly advocated the use of free crucial incisions of the bitten part, with thorough flushing of the wound with a hot solution of permanganate of potassium. We note with interest a further report of Dr. Rodgers in the *Indian Medical Gazette* for October, 1905, in which he records 12 cases treated by this method with 10 recoveries. Of these 12 cases, 2 were known to be due to the Russell viper, 7 to the cobra, and 3 by a snake not identified. He analyzes the results both as to the nationality of the patients treated, their age and sex, the kind of snake, the position of the bite, and the time after the bite when the treatment was commenced. He also discusses the question of the influence of the number of fang marks. The position of the body is of course an exceedingly important factor. Thus when the fangs strike upon a part, such as the hand, in which they come in contact with bone the fang may not penetrate deeply enough to permit all of the venom to enter the tissues, whereas when soft tissues are bitten all of the poison enters into a vascular network with great speed. The conclusions at which he arrives are that permanganate of potassium is certainly to be regarded as one of our most valuable remedies in combating this condition, and he advocates the employment of the lancet which Sir Lauder Brunton and Sir Joseph Fayrer and himself described in the *Indian Medical Gazette* for September, 1904. It will be remembered that this lancet was so devised that by its use the permanganate of potassium could be immediately injected directly into the poisoned area. It is interesting to note that in the same issue of the *Indian Medical Gazette,* in the department of Correspondence, there is a letter from Civil Surgeon Choudhuri reporting an instance if viper bite in a dog which was treated with permanganate of potassium, the dog surviving. In this instance the surgeon to whom the dog was taken, after having had a ligature applied upon the proximal part of the leg, made an incision into the area which was bitten, and then rubbed crystals of permanganate of potassium into the part. Two other dogs were bitten at the same time by the same viper and did not receive this treatment, dying within two and a half hours of being bitten.

As the reporter points out, there are five interesting points in connection with this case: first, that it really was a case of snake-bite because the snake was killed and identified; second, that two officers saw the snake bite the dog, and hanging on to it, so that there could be no doubt that the bite was effective; third, that the dog that was bitten was the first of the three, and therefore got a very full dose of the poison; fourth, that a ligature applied immediately was effective in one and a half hours in preventing the absorption of a fatal quantity of the poison; fifth, that the other two dogs which were not treated succumbed within two and a half hours.

HEMORRHAGE FOLLOWING TONSILLOTOMY.

Reports of cases of severe hemorrhage following tonsillotomy rarely appear in surgical literature. The experience of every one who practices this operation is such as to convince him that it is a complication sufficiently frequent to cause

anxiety, and exceptionally so severe and persistent as to threaten life. It is true the danger of hemorrhage is much greater in an operation on older patients than it is in children. None the less the statistics of large clinics show that it occasionally happens in infants under seven years of age. Constantin (*Annales des Maladies de l'Oreille, du Larynx, du Nez et du Pharynx,* tome xxxii, No. 2, 1906) notes that the tonsillotome is *par excellence* the instrument the use of which is followed by hemorrhage, and that even the most carefully devised instruments do not safeguard against this complication. Thus Escat has reported four cases of serious hemorrhage after the employment of an instrument with dull cutting surfaces.

The electrotome is supposed to be followed by no bleeding at all. This is true of primary hemorrhage. It occasions an intense inflammatory reaction, and secondary hemorrhage of the most threatening character has been noted a number of times. Ignipuncture has also been followed by serious bleeding. Indeed, there is no treatment which is free from this danger. It may follow after the best conducted and most absolutely indicated operation. Since this complication is at times unavoidable it is needful to provide against it. The usual applications, such as ice, gargles either hot or cold, and containing astringents such as gelatin, cocaine, chloride of calcium, or nitrate of silver, the actual cautery, compression of the carotid, direct pressure upon the hemorrhagic area either by the fingers or by a hemostatic forceps especially designed for this purpose, Doyen's instrument being perhaps the best, are all serviceable, and provision should be made for their application.

Forcipressure, torsion, or ligature of the bleeding vessels is at times applicable; ligature en masse of the tonsillar stump is sometimes serviceable, but is difficult of application. The procedure of choice, according to Constantin, is a close suture of the anterior and posterior pillars, combined with tamponing of the tonsillar cavity. When all these methods have been exhausted ligature of the carotid may be considered. The common carotid has customarily been tied, with unfortunate sequelæ so far as the brain is concerned. This ligature should, of course, be applied to the external carotid. Under some circumstances von Holst's suggestion of tamponing the pharynx may be useful. This implies a previous tracheotomy. Escat, however, proposed laryngeal intubation, and the insertion of a tube through the mouth into the stomach, thus allowing of a light packing of the pharynx without interfering with the function of either respiration or deglutition.

THE OPERATIVE TREATMENT OF OLD FRACTURES OF THE LOWER END OF THE RADIUS.

Although fractures of the lower end of the radius are so common that every practicing physician sees and treats many of them, the results of this treatment are at times unsatisfactory, both from the standpoint of deformity and of usefulness. Almost without exception these unsatisfactory results are due to imperfect reduction of the deformity, since if the injured bones are at once put in proper relation to each other and are splinted with due regard to the principles of surgery, there is every tendency toward rapid and complete healing without notable interference with function.

The reduction of deformity or displacement may be extremely difficult because of impaction, and usually requires for its accomplishment the administration of an anesthetic. It is undoubtedly true that the great majority of these fractures, even though treated by those not specially skilled, recover promptly and completely. The functional recovery may be complete even with considerable deformity. As a rule, however, a persistent deformity implies also more or less permanent disability, often associated with a great deal of pain. In this class of cases surgery has heretofore had little to offer. Lothrop, however, believing that the deformity and disability are associated and that the former can be corrected, proposed and carried into effect in a series of cases reposition by means of osteotomy with most excellent results, although in some cases it was needful to resect the ulna to bring the radial fragments in proper apposition, or to overcome the deforming prominence of the ulnar styloid so common after Colles's fractures, even after they have been properly reduced and treated.

Lothrop holds that unsatisfactory results in this fracture are nearly always due to neglect on the part of the patient or of the physician; that where proper treatment is applied from the first no subsequent surgical operation will be required; that if the result is not satisfactory in the first three weeks, whatever union has taken place can usually be broken up by manipulation under an anesthetic; that after the third or fourth week the best results are obtained by means of an osteotomy in the line of fracture; that after two to six months osteotomy always improves the position and frequently improves the function, and after six months correction of the deformity is more difficult and usually requires an added osteotomy of the ulna. Moreover, function is rarely improved at this time. These deductions from his cases, which are reported in full (Medical and Surgical Reports of the Boston City Hospital, 1905), seem thoroughly justified by his experience. Moreover, they appeal to the surgeon as being conservative and rational. His incision for exposure of seat of fracture is made along the outer side of the radius and involves no important structures.

LATE RESULTS OF THE TREATMENT OF INOPERABLE SARCOMA BY THE MIXED TOXINS OF ERYSIPELAS AND BACILLUS PRODIGIOSUS.

It was more than fifteen years ago that Coley electrified the surgical world by reporting three cases of inoperable sarcoma treated by injections of erysipelas streptococcus, basing this deliberate infection upon the fact to which attention had been drawn by occasional reports in medical literature, and of which he himself had knowledge, that an attack of erysipelas will sometimes cure malignant growth. His first case, one of recurrent inoperable spindle-cell sarcoma of the tonsils and glands of the neck, developed an acute attack of erysipelas, which was followed by cure of the malignant growth, which did not recur for eight years. A second patient, suffering from an extensive inoperable mixed, round, oval, and spindle-cell sarcoma of the back and groin, also recovered as a sequence of erysipelas, with prompt recurrence, which was again cured in the same way. Three and a half years later death resulted from metastasis in the liver and abdomen.

Coley learned that it is extremely difficult to produce erysipelas at will, and that the curative properties of the disease are incident to the toxic principles of the streptococcus. Moreover, two fatalities occurred as a result of the inoculation with the active germs, hence Coley resorted to a preparation of toxins, mainly those produced from cultures of erysipelas made virulent by frequent passing through a series of animals, together with toxins from cultures of the bacillus prodigiosus. In the *American Journal of the Medical Sciences* for March, 1906, Coley gives minute directions for the preparation of the mixed toxins.

As a result of his personal experience he makes the following suggestions: The beginning dose should always be the minimal one, since there is an individual susceptibility and highly vascular tumors react with great violence. Moreover, for local injections the dose should be much smaller than for interstitial ones inserted remote from the tumor. The initial dose for local injection of either the preparation made according to Dr. Buxton's formula or the new and stronger preparation made by Parke, Davis & Co. should be one-fourth to one-half minim; for interstitial injections remote from the tumor, one minim. The dose should be gradually increased until a chill occurs within two hours after the injection, followed by a temperature of 101° to 104°. Daily injections should be employed if the patient is able to bear them. When the tumor softens incision and drainage are indicated, followed by moist antiseptic dressings. Tonic and supportive general treatment is indicated. In case the injections are efficacious there will be a pronounced improvement within four weeks. After this improvement is noted it may be needful to continue the treatment for an entire year. The toxins are kept in a cool, dark place, and on an average are administered within three months of the date of their manufacture, though they will retain their strength for one year.

In doses less than one minim the toxins can be diluted with boiled water; in doses larger than one minim no dilution is need-

ful. When the toxins are administered as a prophylactic after operation much smaller doses can be given—*i.e.,* those sufficient to produce slight rise of temperature, headache, and malaise. Nor is the long-continued administration of these toxins hurtful. The curative effect of toxins is best marked in spindle-cell sarcoma, and least of all in the melanotic variety. Indeed, Coley holds that no case of round- or spindle-cell sarcoma is too desperate to warrant a trial of the method. Coley cites many examples of malignant tumor permanently cured by attacks of erysipelas, and to his original collection he has added a number of others, one of particular interest contributed by Dr. H. N. Neal of a permanent cure of lymphosarcoma of the neck following operation which became infected. Even in the case of metastasis Coley now advises the use of antitoxin. In this relation he calls attention to the fact that the *x*-ray by causing too rapid breaking down of sarcoma of the lymphatic glands may occasion extensive metastasis, and cites a case in corroboration of this theory.

Coley's final results are convincing. He states that all of his cases were beyond operation and were absolutely hopeless as regards any hitherto known method. Of 36 such cases 26 were alive and well from three to thirteen years after treatment. It is pointed out that the value of any method in the treatment of malignant tumors is dependent not upon the number of cases in which the tumors have disappeared, but upon the number of cases in which the patients are alive a sufficient number of years to warrant us in calling them cured. Coley has traced not only his own cases, but those successfully treated by other surgeons. His table of successful cases with some individual perfectly astonishing results will do much to revive a treatment which in the hands of the majority of Coley's colaborers has proven worse than useless. It is true that with them the injections were not long continued, since even in small doses the effect seemed profoundly debilitating. It may be that with the more potent preparation and fuller knowledge of the uncertainties of the treatment and willingness to persevere in it others may find it as valuable as has its distinguished inventor.

Reports on Therapeutic Progress

DELAYED POISONING BY CHLOROFORM.

From quite the inception of the practice of anesthesia by chloroform cases have been reported of patients who died with anomalous symptoms some hours or days after the inhalation of chloroform, but no definite conclusion appears to have been come to as regards the true connection between the fatal result and the anesthetic. In England Dr. Leonard G. Guthrie has undertaken some careful and suggestive work bearing upon the subject. His papers have appeared in the columns of the *Lancet.* During the past year, however, much light has been thrown upon these cases both by Dr. Guthrie, Dr. E. W. Scott Carmichael, and Dr. J. M. Beattie, also in the columns of the *Lancet,* and by Dr. Arthur Dean Bevan and Dr. H. Baird Favill, who have made a remarkable clinical pronouncement upon the subject. Dr. James A. Kelly reports observations upon 400 cases made in the Boston Children's Hospital and Boston City Hospital. Of these 46 evinced the symptoms of acid intoxication and six deaths took place. The cases which Dr. Guthrie first described were those of children, and the symptoms agree in the main with those which have been brought forward by others. The pathological lesions are fatty changes in the liver (resembling those of acute yellow atrophy), kidneys, suprarenals, and of the epithelium of the mucosa of the stomach. The symptoms which appear at various times after the patient has apparently recovered from the operation shock and the anesthetic may be grouped as repeated vomiting of foul watery fluid, followed by what looks like dregs of beef tea; extreme restlessness; excitement amounting in some cases to delirium, alternating with apathy, which may deepen into coma. Jaundice with albuminuria and cylindruria are developed, and death commonly occurs on the fifth day and is due to cardiac and respiratory failure. This, in some cases, happens between the twelfth to the forty-second hour after the anesthetic is inhaled. Although pyrexia, and even hyperpyrexia, have been recorded they are not commonly associated with these cases, a subnormal temperature being more usual. There is a distinct

odor of acetone in the breath of patients, and diacetic acid, acetone, or both, can be detected in the urine.

Dr. E. G. Brackett, Dr. J. S. Stone, and Dr. H. C. Low, who have narrated similar cases occurring under ether, have shown that that anesthetic is seldom the cause of severe acid intoxication, much less so than chloroform. Acetone, they assert, is associated with the destruction of fat, and its presence in the urine is so constant as to lead many to attribute death to acetonuria. This, however, cannot be maintained, as it has been experimentally shown that the severity of the case does not correspond with the amount of acetone in the urine. Dr. Guthrie, whose experience differs from that of Dr. Brackett, Dr. Stone, and Dr. Low, has never found aciduria to occur with the symptoms and lesions above described unless an anesthetic has been given antecedently. He suggests that these bodies may, by lessening oxidation, produce breaking up of the fats of the body, giving rise to the formation of *b*-oxybutyric and other acids which are precursors of acetone. It appears that neither the nature of the operation nor sepsis can be regarded as causative. Some observers—and it must be remembered that Lengemann, Victor Bandler, Erlach, Marthen, W. Mintz, Cohn, G. E. Brewer and many others have now reported cases and closely studied their clinical and pathogenic bearings—regard the condition as a chemical toxemia, as an acidosis, or acid intoxication. Some believe the anesthetic is the determining factor, others that it is associated with some antecedent pathological change of the nature of fatty degeneration.

From the experimental side Nothnagel, Ungar, Strassmann, Thiem, and Fischer have brought about changes, by chloroforming animals, which correspond closely with those which Dr. Guthrie has so graphically described. The cases with marked symptoms and acetonuria were not at all fatal; recovery took place as soon as acetone and diacetic acid disappeared from the urine. Some observers consider that the condition in its milder phases is probably less uncommon than has hitherto been believed, and that it explains in many cases a slow recovery and abnormal symptoms arising in the course of convalescence after an operation. Although the condition is closely analogous to acute yellow atrophy of the liver, it is well, as the recent writers quoted pointed out, to avoid regarding these cases as identical with that morbid state or with acetonemia, but to describe them as acidosis.

It seems clear, however, that whether anesthetics are actual or adjuvant causes of fatal acidosis they act directly in proportion to the quantities inhaled, a fact which gives especial interest to the increasing favor which is shown by the profession to chloroform inhalers which enable the anesthetist to limit the dose to percentages, the strength of which remains under his control. In the *Lancet* of May 27, 1905, p. 1413, Dr. A. G. Levy has described such an apparatus, while Mr. Vernon Harcourt, whose chloroform regulator is now widely adopted, has shown the relation between the chloroform in the inspired and expired air during narcosis. Again, the interesting research of Dr. F. I. Dawson, dealing with the alterations in the blood after anesthetics, emphasizes the importance of limiting as far as possible the actual amount of anesthetic given to the patient. In order to eliminate mere traumatism Dr. Dawson compared the blood changes after fractures with postoperative changes and with observations upon dogs not subjected to operation. Leucocytes, polymorphonuclears, large mononucleateds were more increased by operation under anesthesia than in fractures; small mononucleateds and eosinophiles were more diminished after operation. The leucocytosis appeared to be independent of the alteration in the red corpuscles and of temperature. He regards chloroform as feebly hemolytic, but ether as more so, and advances evidence to show that the anesthetic, unless given in large quantities, is not the main factor in blood changes after operation.

The curious form of poisoning when chloroform is given in a room in which naked gas-jets are burning has been experimentally studied by G. Betagh. In dogs and rabbits he found that when they inhaled the products of chloroform vapor which has been acted upon by a gas-jet there were post-mortem hemorrhages in the lung with extravasations, and necrotic

changes with hemorrhages were met with in the kidneys. These lesions explain the symptoms which he found in cases of phosgene gas poisoning with which he had met, viz., vomiting, convulsions, respiratory distress, albuminuria, hemoglobinuria, nephritis, and collapse. No such result followed inhalation of the products of combustion of illuminating gas. Armand and Bertier have studied the subject and come to similar conclusions. Dr. J. C. McWalter suggests in the columns of the *Lancet* that the decomposition of chloroform which has been shown to occur from contact with animal membranes may under certain conditions occur as a result of contact with the mucous membranes of the patient.—London *Lancet*, Dec. 3, 1905.

AN ANALYTIC STUDY OF UREMIA, WITH SOME GENERAL CONCLUSIONS IN REGARD TO ITS CAUSES AND TREATMENT.

CROFTAN in the *Journal of the American Medical Association* of January 6, 1906, tells us that the general principles governing the treatment of uremia are as follows:

We are wont to treat uremia by stimulating the flow of urine, by purging and by sweating, with the intention of forcing the kidneys to resume their work, and of ridding the system of the urinary bodies that we imagine to be circulating in excess. In addition, we attempt to regulate the diet in such a way that there shall accumulate in the blood the smallest possible amount of residual nitrogenous bodies ("Harnschlacken"). If, now, uremia is not due to the circulation in excess of such bodies, the above therapy is wrongly directed.

It is questionable, moreover, whether any of the above measures can at best do more than rid the body of water, some sodium chloride, and possibly a little urea; the loss of water one might imagine to do more harm than good, for it should promote the concentration of the poisoned body fluids, and hence render them more toxic. There is surely no exact evidence to show that the sweat or the urine of uremic cases after the use of diaphoretics and diuretics becomes more toxic than before; nor has any one ever succeeded in demonstrating in such sweat or urine any of the albuminoid or alkaloid bodies that must be accused of causing the most fulminating symptoms of uremia.

The chief object of treatment should be to prevent the development of acute uremia by giving attention to those organs and functions that threaten to fail. In order to do this intelligently, the renal idea should be relegated to the background, and more attention should be bestowed in preuremic states on the liver and the general metabolism. The liver, above all, should have a rest. To stimulate the liver in chronic uremia is bad practice. The same principles should obtain here as in the treatment of a fatigued heart or a fatigued stomach or a fatigued nervous system.

First rest, then graduated exercise until the normal tone is regained. Stimulation should be reserved for emergencies and as a last resort. To accomplish this end all articles should at first be eliminated from the diet that can irritate the liver or stimulate it to increased functional activity; every effort should be made to reduce intestinal putrefaction to a minimum, for intestinal toxins as they reach the liver severely strain the disintoxicating function of the organ. No cholagogues should be administered.

After a period of rest—and starvation for a few days seems a rational plan—the liver may be gently stimulated in the hope that it may be coaxed gradually to resume its functions. This should be attempted by the carefully graded administration of salicylates, of bile acids, possibly of calomel; in addition, various dietetic and physical means may be adopted that we know to be capable of stimulating the various functions of the liver. All this treatment should be carried on with careful supervision and daily control of the effect of these measures on the functional activities of the liver as evidenced by the composition of the stools and the urine and the general condition of the patient. The details of the various means mentioned and of the symptomatic evidences of the state of the liver function cannot be discussed within the narrow frame of this article. The author contents himself with establishing general principles.

The treatment of the acute uremic attack is always an ungrateful task; for it is immaterial whether we are dealing with

a disorder that is primarily or in its ultimate consequences due to renal or hepatic or general metabolic insufficiency, in any case we are dealing with a terminal syndrome, that is due to the crumbling of the whole cellular edifice. To arrest this collapse essentially means to revive a dying organism. That this may occasionally be done for the time being cannot be denied; and as the recuperative powers of the human body border on the phenomenal no effort should be spared to bring an acutely uremic patient back to life.

Of sweating, purging, and the stimulation of the kidneys the writer has already spoken. The administration of liver stimulants by mouth seems hardly feasible, and he asserts he has never seen any good effects in uremia that he could fairly attribute to this practice. The most sensible procedure is bloodletting. This useful measure constitutes a lost art nowadays, and it is time that it should be revived; we are dealing in uremia with a toxemia (for no organic lesions that could explain uremia are discovered after death), and to eliminate some of the poisons that are present in the blood by bleeding is always indicated. Whether the injection of a saline to replace the lost fluid is useful or necessary is not yet established; it can certainly do no harm, particularly if some saline is injected that can stimulate the hepatic function—*e.g.*, salicylate of soda in normal salt, or a solution of sodium citrate or phosphate in appropriate molecular concentration. Symptomatically, the use of such infusions has been useful in the writer's hands, and has occasionally caused the most alarming symptoms of a uremic attack to disappear when other measures, he believes, would have failed.

RAW MEAT ALIMENTATION IN TUBERCULOSIS.

In the London *Lancet* of December 23, 1905, PHILIP writes on this theme. He was led a good many years ago to practice raw meat alimentation in tuberculosis. The results obtained were so satisfactory that he has continued the method ever since in much the larger proportion of his cases, both in hospital and in private practice. The striking researches of Richet and Hericourt placed the method of raw meat alimentation (zomotherapy) on a scientific basis. They found in the case of dogs inoculated artificially with tuberculosis that all such animals fed in the ordinary way speedily underwent a progressive emaciation, while animals fed on raw meat in one or other form, in place of emaciating put on considerable weight. They found that the muscle juice freshly expressed from the meat was as efficacious as the meat itself. Cooked meat was of practically no value.

Mode of Exhibition.—It must be kept in view that in order to be effective the alimentation by raw meat must be systematic and continued. Such alimentation is not a mere variation in the patient's dietary to suit his varying humor or caprice. It is a therapeutic procedure determined by the patient's needs in the light of clinical and experimental observation. Accordingly the form of exhibition and dose ought to be regulated in the way in which we regulate the exhibition of other remedies. The author has found no difficulty in accustoming the patient to the use and even enjoyment of the raw products to be described. Patients quickly overcome any preliminary distaste. When they realize the advantages of the treatment they take the raw meat with avidity.

Form of Exhibition.—It is usual to order it in one of three methods: (1) Pounded raw meat—*i.e.*, finely minced or bruised beef slightly seasoned with salt, etc.—served natural, like mince collops, cold or gently warmed throughout, say from a quarter of a pound to half a pound twice or thrice daily. The meat should be perfectly fresh. (2) Beef juice, prepared as follows: Extract half a pound of fresh meat in half a pint of cold water plus half a teaspoonful of salt for from one and a half to two hours at 35° C. Express the liquid through a cloth. Or the juice may be expressed from the meat directly without the addition of water with more powerful pressure. The meat juice must be freshly prepared for use on each occasion. (3) Raw meat soup prepared as follows: Take half a pound of finely minced fresh meat, and mix in a bowl with sufficient milk to produce a thick, uniform paste. Immediately before serving add half a pint of milk at 60° C.; or the soup may be made in a similar fashion with stock of beef, or chicken, or veal in place of milk.

In the largest proportion of cases the author has exibited raw meat pure and simple, and the more experimental observations, to be referred to presently, were conducted on patients fed on raw meat. All the observations go to show that cooking of the meat modified to a remarkable degree the absorption and retention of the nitrogen, both in tuberculous and physiological subjects.

Experimental Observations.—Observations to determine the value of raw meat alimentation have been recently conducted by Dr. J. J. Galbraith in the research laboratory attached to the author's clinic in the Royal Victoria Hospital for Consumption, Edinburgh. These observations were made in relation both to tuberculous and physiological persons. After the subjects of experiment had been brought as far as possible to a nitrogen equilibrium observations were made for three successive periods: (1) on cooked meat; (2) on raw meat; and (3) on cooked meat again; the diet remaining otherwise uniform and as simple as possible for the purpose of analysis. The results may be summarized as follows: (1) The exhibition of raw meat was followed by a marked increase of nitrogen retention, even with a diminished intake. (2) Intestinal metabolism was improved. (3) There was a rapid increase in hemoglobin. (4) Digestive leucocytosis (lymphocytosis) was increased, sometimes to more than double that occurring in relation to cooked meat.

Clinical Observations.—These, which extend over a long period, may be shortly summarized as follows: (1) General appearance. This quickly improves. The pallid, soft aspect is replaced by a look of health and vigor. (2) Muscularity. The soft, flabby muscles fill up and become firmer. With increasing firmness of muscle the patient's sense of fatigue lessens and he becomes keen for effort. Myotatic irritability tends to lessen and finally to disappear. (3) Circulation. The pulse-rate is lessened and a corresponding improvement is effected in the blood-pressure, these phenomena being presumably the expression of improved muscularity in the heart and improved tone in the muscular walls of the vessels. (4) Blood. There is a rapid increase in hemoglobin. This is conspicuous even in patients who may have made fair progress on a cooked dietary when afterward placed on raw meat. Within a few days the hemoglobin runs up from 10 to 20 per cent. There is a remarkable increase in digestive leucocytosis. Negatively, the author notes that hemoptysis does not follow the adoption of the method. He has frequently continued raw meat alimentation during the course of hemoptysis. He emphasizes the point because some physicians would exclude meat in case of hemorrhage altogether. (5) Gastrointestinal functions. These become simpler and more effective. Gastrointestinal discomfort is notably reduced. Intestinal metabolism is simpler and more complete and the stools improve in character. Detailed observations in relation to gastric digestion by means of examination of the stomach washings, recently undertaken by the author's resident physician, Dr. B. M. Cunningham, afford corroborative evidence under this head. (6) Temperature. The temperature is influenced favorably. This depends doubtless on a variety of causes. It frequently follows improvement in gastrointestinal function. Sometimes with no other modification of treatment save that under discussion a highly irregular temperature gives place within a week or two to an almost uniform range about normal. (7) Weight. Here a distinction must be drawn between increased weight dependent on increase of fatty tissue and that associated with increased size and firmness of muscle. The former increase is of doubtful value to the patient. Sometimes it is positively harmful, the unfortunate individual moving about with increasing difficulty and considerable dyspnea. On the other hand, increase of weight associated with increased size and firmness of muscle occurs on raw meat alimentation without much addition of fat. (8) Local lesions. All these tend to be influenced favorably, whether occurring in relation to lungs, larynx, glands, intestine, or elsewhere. The change which is evident in superficially disposed tuberculosis—*e.g.,* in glands and skin—is sometimes most remarkable.

It has been the endeavor of the author to compress into very brief summary a prolonged series of close observations. From frequent conversations with colleagues, the writer is satisfied that the significance of raw meat alimentation

has been insufficiently recognized. His purpose in making the present communication will have been attained if a method of treatment which his experience leads him to regard as invaluable receives a fairer and more complete trial. Such trial involves the strictly systematic use of raw meat in one or other form, not the occasional replacement of other dietary by raw meat. Cooked meat occupies a different platform. So do the various commercial beef powders and beef extracts. From the therapeutic standpoint he has found these of little value.

ON THE USE OF OPIUM IN MYOCARDITIS, WEAK HEART, AND DILATED HEART.

MUSSER has this to say of this subject in the *American Journal of the Medical Sciences* for January, 1906. He thinks there are sound clinical reasons for the belief that opium is a tonic in cardiac debility. Who has not seen the flagging heart of shock induced by pain or other depressive measures brought up by morphine? Who will not prescribe this drug in the sudden heart failure of myocarditis—the asystole with the accompanying edema of the lungs of this affection? Who does not give it in rheumatism for its tonic cardiac effect? The author pleads for the continuous use of opium or morphine also in myocarditis to prevent angina pectoris, or to lessen the effect or defer the dreaded asystole. He has had patients take for months and months small doses of the deodorized tincture or the extract of opium, thereby checking waste, reducing the susceptibility to peripheral sensations which fret an irritable heart, replacing exciting stimulants, as alcohol and strychnine, calming a perturbable nervous system, and lessening the necessity for food to the relief of digestion, metabolism, and elimination.

In case of weak heart after exhausting disease, after prolonged mental and physical pain, and without organic lesion of valves or muscle, opium is of advantage.

In cases of failing compensation, with the onset of stases, the heart is supported, especially if the unfortunate possessor is an impressionable subject who frets and fumes because of the ordinary irritations of life.

In the gradual engorgements from myocardial dilatation, in chronic parenchymatous nephritis, and in arteriosclerosis it is of value. If the patient is hypochondriacal or hypersensitive the second daily dose of opium invites sleep and induces a feeling of well-being.

The dyspnea of myocarditis is relieved or prevented by continuous small doses of morphine for a very long time. The author has seen a form or stage of myocarditis with restlessness, Cheyne-Stokes breathing, dyspnea, and rapid pulse helped by continuous doses of opium. The tachycardia of Graves's disease is relieved, and in three of his instances it appeared to contribute to the cure of the disease. In the nervous and irritable subjects opium is almost necessary to induce comfort.

THE DIETETIC TREATMENT OF NEPHRITIS.

In the *Journal of the American Medical Association* of January 6, 1906, SHATTUCK says the leading principles pertaining to the dietetic treatment of nephritis may be stated somewhat as follows:

1. Such control as we may have to-day of nephritis lies in diet and mode of life rather than in drugs.

2. Such drugs as are useful are so in their effect on the general organism or on the heart rather than on the kidneys directly.

3. In all cases of nephritis our broad aim is to spare the kidneys unnecessary work, not forgetting that the urinary is but one of the systems which comprise the body.

4. In acute nephritis, as well as in acute exacerbations of the chronic forms, Drs. Diet and Quiet should work together. Starvation for a few days, proportional to the intensity of the process and the strength of the patient, is the key-note of the dietetic management.

5. In the chronic forms we seek to lengthen and lighten the life, an aim often largely within our power of attainment. Especially in the contracted form of kidney disease many years of life, much of the happiness which comes from achievement, days and nights of comfort, may hinge on our skill in adapting sound principles to the particular case and in

securing the coöperation of the patient in carrying out the same, persistently, not spasmodically. Dietary restriction should be in the main quantitative rather than qualitative. Alcohol in moderation is not necessarily a poison and may be an aid to digestion.

6. The excess of proteid, not proteid in itself, is harmful to the chronically sick kidney.

7. A varied is more likely than a monotonous diet to promote the manufacture of good blood, and thus to promote good nutrition of the body in general and of the myocardium in particular.

8. The amount of albumin is in itself no guide as to the extent of dietary restrictions.

REPORT ON THE ACTION OF VARIOUS SUBSTANCES ON PURE CULTURES OF THE AMEBA DYSENTERIÆ.

To the *American Journal of the Medical Sciences* for January, 1906, THOMAS makes a report on this subject, and concludes that boric acid, eucalyptol, ichthyol, oil of cassia, and infusion of quassia have slight, if any, effect on the amebæ.

Tannic acid 1:100, sulphate of copper 1:2000, permanganate of potassium 1:4000, and sulphate of quinine 1:1000 have a distinct moderate deterrent effect on the growth of the amebæ and cholera spirilla within thirty minutes.

Succinic peroxide acid 1:1000, permanganate of potassium 1:2000, sulphate of quinine 1:500, nitrate of silver 1:2000, argyrol 1:500, and protargol 1:500 exercise a very marked deterrent effect on the growth of the cultures within thirty minutes, and in the case of the silver salts and the succinic peroxide acid the action is plainly due to the destruction or inhibition of the growth of the symbiotic cholera spirillum.

Thymol, 1:2500, applied for fifteen minutes has the unique effect of destroying the amebæ, while exercising only a moderate effect on the cholera spirilla.

There is no specific treatment of amebiasis, but if the test-tube results which the author details in his paper are a fair index of the behavior of the substances in the actual local treatment of the disease, the clinician can add to his therapeutic armamentarium a few more agents of a value equal or superior to quinine. Such a choice will be appreciated by physicians practicing in the tropics when they encounter patients intolerant of quinine, or otherwise failing to benefit by its local action.

MALARIA.

The London *Lancet* of December 30, 1905, tells us that the all-important question of antimalarial measures is being watched and advocated with interest in many quarters. The three most prevalent measures are screening of windows and doors of dwelling-houses, quinine-taking, and the destruction of the breeding-places of anopheles mosquitoes. With regard to the Corsican Antimalarial League, according to F. Battesti, excellent results are reported from the metallic screening of doors and windows. The success in many instances was complete, no cases of malaria occurring where the screens were carefully and efficiently used, and even in houses partially protected the number of cases of malaria fell from 47 to 11.60 per cent. The metal screens in no way interfered with ventilation or with the comfort of the occupants of the houses. This statement is in accordance with opinions expressed in many parts of the tropics, and it is but the extension of the principle of the mosquito bed-curtains to houses. The marvelous results obtained by Celli in the Roman Campagna by protecting the houses of the railway servants dwelling in the Campagna were the outcome of the first extended campaign in this direction, and the mosquito-protected hut in which Dr. G. C. Low and Dr. L. W. Sambon resided in the Campagna during the malarial season some four years ago, with complete immunity from malaria, helped to bring the method into prominent notice. There can be no doubt that protection from the mosquito means protection from malaria.

Quinine-taking is widely utilized by the laity and recommended by medical men as a prophylactic in malaria. Considerable doubt, however, prevails as to the proper method of administration; some recommend a daily dose, some a dose twice weekly, and as in the times of taking so in the quantity necessary is there a discrepancy of opinion. There can be no doubt that a daily dose of five

grains gives a substantial immunity, but five grains is a large dose and more than most men can stand. Even three grains daily is often too much, yet it does not always prevent malaria. A man who takes ten grains once a week is more likely to escape fever than he who takes five grains every other day. Dr. St. George Gray recommends a 10- or 15-grain dose of quinine on two successive days with an interval of eight or nine days before the next two doses are taken. Dr. Gray bases his recommendations as to quinine-taking on the fact that the life-cycle of the parasite is nearly always forty-eight hours, and that some eight or nine days must elapse after infection before the parasites become sufficiently numerous in the blood to cause an attack of fever; so that if the quinine is taken every eighth or ninth day the parasites are destroyed before they can cause fever.

The destruction of mosquito breeding-places as a prophylactic measure against malaria has been strenuously advocated by Major Ronald Ross. In no instance has this method been applied on so extensive a scale as that attempted by Dr. Malcolm Watson at Klang and Port Swettenham in the Malay States. These towns are situated in low-lying, swampy ground, where virgin jungle prevails to a considerable extent, where no hot or cold season even temporarily stops the mosquito pest, where the rainfall is 100 inches per annum spread over all the months of the year, and where the swamps, wells, and ditches are permanently available as breeding-places for mosquitoes. At first sight the task of eradicating mosquitoes in such a district would seem hopeless, yet the results obtained by Dr. Watson were excellent and highly encouraging. Malaria has practically, if not absolutely, disappeared from the two places, which in former years were probably the most unhealthy in the whole district, while the remainder of the district not subjected to the anti-malarial measures remains much as it was. The actual figures are remarkable. At Klang in 1901 there were 334 cases of malaria admitted in the hospital; in 1902 the number fell, after antimalarial measures were begun, to 129; in 1903 they still further declined to 48; and in 1904 but 28 cases were admitted. At Port Swettenham during the same years the numbers read 188, 70, 21, and 4; whilst in unprotected districts the numbers were 197, 204, 150, and 266. The eradication of mosquitoes was achieved by systematic and continuous work in drainage, fillling in swamps and ditches, and clearing the neighborhood of virgin jungle and dense secondary growths. Malaria as a fatal disease in Klang and Port Swettenham declined to *nil* in 1904, whilst in other parts the number of fatal cases actually increased. The well known antimalarial measures undertaken by Major Ross at Ismailia have continued to afford good results. During the year 1901, before antimalarial measures were tried in Ismailia, the number of cases of fever observed was 1990; in 1902, after defensive measures were commenced in September, the cases numbered 1548; in 1903 they fell to 214; and in 1904 they amounted to 90 only.

ESSENTIALS IN DIURETIC TREATMENT.

McALISTER writes in the *Journal of the Medical Society of New Jersey* for January, 1906, upon this topic. He tells us that diuretic treatment which presumes the liberation of nascent reagents in the blood, that they chase up and down the tissues till their chemical greed has been satisfied and then yield themselves to the kidneys to be expelled from the system, is widely theoretical, to say the least. Yet substantially such claims for fancy diuretics are daily paraded before the profession. Calculi are quite easily dissolved in a mortar, but the body is not a crucible. In the selection of diuretics increasing preference is given the simplest remedies. For the most part these are the older members of the United States Pharmacopœia and chiefly vegetable products. The reason for this is clear and abundant. Their value is established beyond all peradventure. They suffer comparatively little or no change in passing through the alimentary canal. These are sterling facts, but the third reason which may be named is distinctly superior: these remedies do not disturb the processes of digestion. On the other hand, they rather stimulate these functions. This applies to the vegetable acids and their salts and to certain resin-bearing leaves, of which buchu is the type. Much accumulated

experience has rendered possible such blending of certain drugs as to produce practically ideal diuretic mixtures with due regard to well known laws of physiology, and these will seldom fail to yield the maximum diuresis without delay or injury.

These laws pertain to the correlated organs, namely, the bowels and skin. When the former are locked, they should receive proper attention before special diuretic treatment is inaugurated. The purgative employed should be chosen with particular reference to the general condition of the system. Presumably a briskly acting saline will answer best in the majority of cases.

The special diuretic power of water is to be added to that of the remedies selected by liberal potations with each dose and during the intervals, if it can be borne with comfort. When diuretic treatment is instituted to remove accumulated fluids, water must be eschewed as far as comfort will permit. If the patient is able to walk about very moderate exercise in an airy room or in the open air should accompany the treatment. Exercise which provokes perspiration will foil the purpose of the treatment. If the patient is bedridden the room should be kept as cool and the bedding as light as comfort will permit. This will be facilitated by cool drinks, as already indicated.

It is presumed in these remarks that nephritis and grave cardiac disease are absent, two conditions in which every diuretic treatment will fail. In these diseases the auxiliary emunctories must be stimulated to allow the kidneys the maximum of rest.

Finally, what remedies must be blended to prepare an ideal diuretic mixture? They are not new, nor are they "made in Germany."

Buchu, with one or more other members of its valuable family, one of the vegetable acid salts, a nerve sedative for a corrective, and an ether to aid diffusion, constitute such a mixture. When a distinct astringent is indicated preference is to be given to uva ursi. If for any reason the volatile diffusible effect is especially called for, oil of juniper should be added to the remedies already indicated. As already stated, these mixtures possess no novelty; but the point to be emphasized is that their general utility and reliability are commanding increasing attention. No synthetic or inorganic remedy or remedies, old or new, approach them in value.

SOME PROBLEMS IN THE TREATMENT OF PNEUMONIA.

To the *Medical Record* of February 24, 1906, LE FEVRE communicates his views on this subject. It is his conviction that to the loss of vasomotor control must be ascribed the chief danger in pneumonia, and he thinks this gives us a guide for treatment, and that it harmonizes many discordant opinions concerning the value of certain drugs as cardiovascular stimulants, when there is loss of resistance in the arteries and arterioles, producing marked disturbance of the equilibrium of the circulation, although the left ventricle is relatively strong. The pulse becomes more rapid, small, and dicrotic. The blood passes rapidly to the venous side, causing an incomplete filling of the arteries, while the veins become overfilled. The increased pressure in the veins, slight though it be, and the rapid respirations, tend to cause the right auricle to be distended. The weakened right ventricle cannot empty itself against the increased pressure present in the pulmonary circulation, and there develops right-sided cardiac dilatation and insufficiency with a tendency to cardiac thrombosis, and later pulmonary edema and respiratory failure. To combat this condition nitroglycerin is frequently advised, under the belief that by dilating the arteries the work of the heart is decreased. But peripheral resistance is already too low on the arterial side, and nitroglycerin only makes it lower. We have no data to prove that nitroglycerin has any effect on the pulmonary circulation. The author has only noted bad effects when nitroglycerin and other members of the nitrite group were given in pneumonia during the stage of vasomotor weakness. It is only indicated in pneumonia when there is high arterial tension associated with a rapid-acting heart, as occurs in cases of arteriosclerosis and nephritis. Under such conditions it should be given from the very beginning, as the rapid and forcible acting left ventricle soon exhausts itself pumping

against high blood-pressure. The author strongly condemns the tendency of resorting to nitroglycerin whenever cardiac failure is suspected.

Against the loss of vasomotor control we have two classes of stimulants: (1) Those acting on the medullary centers—strychnine, caffeine, atropine, and cocaine. (2) Those acting directly on the muscular tissue of the arterial system—digitalis, ergot, and suprarenal extract. When loss of vasomotor control is associated with evidence of weakness and exhaustion of the medullary centers, as rapid, shallow respirations and cyanosis, marked apathy of the patient, strychnine should be the stimulant selected. The dose and frequency of administration should be just sufficient to increase the irritability of the centers. If carried beyond this point the overstimulation only hastens the time of absolute failure. No drug is able to do so much good and also so much harm in pneumonia as strychnine, and the deceptive feature about it is that under its free use the patient's condition improves and the secondary result of overstimulation is lost sight of. Strychnine should not be a routine treatment in pneumonia; it should not be given until indications for its use are present. A patient suffering from pneumonia is in an endurance race against the time of crisis. The spur should not be used too early or too freely. He may need all the stimulation possible at the end. Atropine, cocaine, and caffeine are stimulants that can be used for the emergencies that occur at the crisis, although when strychnine has lost its power we are generally leading a forlorn hope. In cases of respiratory failure both atropine and cocaine have the power to stimulate the respiratory center. The author prefers cocaine to atropine, and when it is applied to the inner side of the nostrils, either as a spray or by painting with a camel's-hair brush, it has a maximum effect on the respiratory center, as he has frequently observed in treating respiratory failure caused by morphine poisoning.

When the vasomotor center does not respond to strychnine, or when the vasomotor loss of control occurs before the weakness of the other centers, and the giving of strychnine would unduly stimulate these centers, the blood-vessels may be acted on by digitalis, ergot, or suprarenal extract. The value of digitalis in treating vascular collapse in pneumonia is a very decided one, and there is no drug that can take its place. It is a well known clinical fact that persons whose normal blood-pressure is very low do not bear pneumonia well. The cardiac rate is very rapid, the pulse dicrotic, and right-sided cardiac dilatation occurs early. The judicious use of digitalis in these cases during the early stage, combined with aconite, slows the heart and restores the vascular tone. Later in the disease digitalis alone is indicated. When there are added symptoms of exhaustion of the other medullary centers also, strychnine may be used in combination with digitalis. Digitalis should be given in pneumonia for a definite purpose. The objection to its use has been due to the giving of large doses throughout the disease, on the theory that it has some specific action.

The power of ergot to contract the arteries is conceded by all. Whether this effect is due to vasomotor stimulation alone, or to peripheral action alone, is undecided. The fact that the physiological action of ergot is so definitely restricted to the vasomotor center and the blood-vessels causes it to be especially valuable in cases of pneumonia with low arterial tension. In alcoholic cases the long-continued use of alcohol, provided it has not induced arteriosclerosis or nephritis, has produced a depression of the vasomotor center; the capillary circulation is also abnormal. In pneumonia, in these cases, there is a peculiar lividity of the surface that is not due to cyanosis from respiratory insufficiency. The pulse has a very low tension, and the sputum is hemorrhagic and dark, not the ordinary brick-dust type. Ergot, by restoring the vascular tone, meets the most urgent symptoms. In many cases of pneumonia in the alcoholic, strychnine, while improving the circulation, increases the delirium and restlessness; it is necessary to give alcohol and narcotics in order to induce quiet and sleep, but these still further disturb the peripheral circulation. It should be administered hypodermically, using the aseptic preparation.

Suprarenal extract or adrenalin chloride acts on the blood-vessels very rapidly and energetically, but its effects last but

a short time. Its use is to be reserved for the treatment of sudden vascular collapse, where we are using every effort to keep the patient alive in the hope that the powers of resistance may finally overcome the disease. For no case of pneumonia is to be given up until absolutely dead. The diffusible stimulants—camphor, musk, aromatic spirits of ammonia, Hoffmann's anodyne—are all emergency remedies.

FATAL RESULTS FROM SUBCUTANEOUS INJECTION OF METALLIC MERCURY.

In recent years the treatment of syphilis by subcutaneous injections of mercury has become very common. Yet serious and even fatal results have from time to time been recorded and probably by no means represent all the casualties. At the meeting of the Société Médicale des Hôpitaux of Paris on January 12, M. Le Noir and M. P. Camus reported the following case:

A woman was admitted into hospital suffering from intense ulcerative and gangrenous stomatitis. Two months previously she had a sore on one of the labia. She was put under mercurial treatment, and at intervals of eight days seven drops of "gray oil" was injected into the muscles of the buttocks on four occasions —*i.e.*, altogether about from 28 to 30 centigrammes of metallic mercury. Three days after the last injection salivation began, although she had taken great care to keep her teeth clean. On admission the gums were red and swollen and in places superficially ulcerated, and there was abundant salivation and great fetor of the breath. The tongue was swollen and painful. On the internal surface of the left cheek was an ulcer of the size of a two-franc piece, with a grayish and sanious coating. There were no signs of syphilis. The temperature was 99.6° F. in the morning and 100.7° in the evening. The urine was very albuminous. The patient was in a state of torpor. The taking of food was painful, and only a small quantity of milk was imbibed. The stools were frequent, fetid, and blackish. Potassium chlorate was given, and the mouth and teeth were frequently washed. Twelve days after admission the state of the mouth was much worse. The ulcer on the cheek was of the size of a five-franc piece and was covered with slough. The odor was very fetid. The temperature did not rise above 98.9°. Nourishment was taken with great difficulty and in insufficient quantity. The diarrhea persisted and the patient wasted. A mouth wash of oxygenated water was prescribed. On the internal surface of each cheek was a gangrenous patch occupying more than half its extent and surrounded by a line of demarcation resembling in appearance noma. On the external surface of the left cheek the skin was red and edematous. There were also gangrenous patches on the soft and hard palate and the lower surface of the tip of the tongue. Mastication was impossible, and deglutition and phonation were very painful. The emaciation progressed rapidly and the diarrhea increased. Vomiting occurred, and in spite of slight improvement of the mouth the patient became anemic and weaker, and died in a state of hypothermia, the temperature being 95.5° and 94.1° twelve and six hours respectively before death. The necropsy showed that the buccal ulcers were in process of repair. On the stomach and intestines were numerous ecchymoses. The colon was congested and covered with a grayish-green gelatinous coating. The kidneys showed acute nephritis, the epithelium being in a state of granular and granulofatty degeneration. It is noteworthy that the doses of mercury administered were not large, and that the toxic symptoms appeared some time after the administration.

Some years ago Mr. Jonathan Hutchinson quoted cases similar to that related above, and deprecated the use of mercurial injections in the treatment of syphilis. He pointed out that the advantage of the method consisted in placing in the patient's tissues a more or less lasting supply of mercury, but that this constituted at the same time a danger. For if salivation be caused by mercury given by the mouth prompt stoppage of the drug will usually prevent ill consequences. Not so if a quantity of an insoluble preparation of mercury be injected in order that it may be gradually absorbed; then only excision of the part can prevent its continuous absorption. At the following meeting of the Société Médicale des Hôpitaux, M. Sicard reported a case in which this had to be done. A young

man was given weekly an injection of "gray oil" containing the regular dose of from eight to ten centigrammes of metallic mercury. Three days after the fourth injection severe toxic symptoms—stomatitis, albuminuria, nausea, and enteritis—rapidly appeared. At the site of the injections in the left buttock was a large swelling. Radiography showed the presence of the metallic mercury. The swelling was excised and was found to contain lardaceous material in which were the remains of the mercury. The symptoms diminished and recovery followed.—*British Medical Journal,* Feb. 17, 1906.

TREATMENT OF GOUTINESS.

In the *Clinical Journal* of February 14, 1906, WILLIAMS gives the following views as to the therapy of this state: We hear a good deal about arteriosclerosis as a clinical entity, but the text-books are silent as to how we should proceed so as to detect its early stages, and as to how we should act so as to check its further development. The author here bids us to remember that the gouty poison is a powerful vasoconstrictor, that if this vasoconstriction is maintained it gives rise to high arterial tension, and that if persistent high arterial tension be not lessened, definite arteriosclerosis, leading, among other things, to apoplexy, granular kidneys, and angina pectoris, will certainly ensue. Now, how is this arterial tension to be lessened? Obviously, by removing the gouty poison and by taking such steps as will insure the permanent reduction of its manufacture in the system. In regard to the general principles which should guide us in these matters the author briefly discusses those which have a special bearing upon the question under consideration.

First, then, as to diet, without careful attention to which it is quite hopeless to attempt the treatment of high arterial tension of gouty origin. The embargo upon meat foods must be absolute; and under meat foods let it be clearly understood are included fish, poultry, and game. Alcoholic drinks, tea, and coffee must also be absolutely forbidden. The patient must be encouraged to drink plenty of milk and to take fruits and vegetables freely. What the author has said above about the great importance of taking plenty of fluid in the gouty state generally must be accepted with considerable reservation in the case of high arterial tension. If the passage outside the body of the extra fluid taken can be insured, then the extra fluid can do nothing but good. If, on the other hand, an appreciable portion of it remains, then, by increasing the actual quantity of blood in the vessels, and by thus adding to the state of tension, it is liable to do an infinity of harm. For this reason a flushing policy, though excellent when it succeeds, should, in the first instance at any rate, be undertaken with caution. The emunctories must, nevertheless, all be urged to do their part in ridding the system of the gouty poison, and the purgatives, diuretics, and sudorifics must be made to do their part. So far as purgatives are concerned nothing can compare with mercury, and for a diuretic it is as well to try that which has been so highly spoken of by Professor Huchard, to whose teaching we owe almost all our knowledge of the presclerotic state, namely, theobromine. The waters of Evian, Contrexeville, and Vittel are admirable aids to all diuretic drugs, and would seem, especially the first named, to possess a special value in the condition we are discussing. Besides the best means of stimulating the skin—that is, by warm baths and electric light baths—is that excellent general measure, namely massage, which is capable of rendering yeoman service in states of high arterial tension, especially when applied to the abdomen; for it helps to dispel "abdominal venosity" and to pass the blood rapidly through the organs which are credited with being actively concerned in the manufacture of the gouty poison.

This refers to general measures, the importance of which should never be lost sight of. We now come to the question of our ability to act directly upon the high blood-pressure and reduce it by means medicinal or otherwise. Do such means exist? They do, but none of them are satisfactory, for the reason that their action is very transient and their continued employment is by no means unattended with danger. Where we find ourselves in an emergency, face to face with a threatening of cerebral hemorrhage or an anginal attack, no one would hesitate

to abstract blood from the arm to the extent of half a pint or more. But it is obvious that this is a process which cannot be often repeated, and as the high arterial tension depends less upon the quantity of the blood than upon the state of the vessel wall, it is useless to reduce the one (especially as the reduction cannot be maintained) without influencing the other. And a similar objection applies to the drugs hitherto introduced for this purpose. Nitrite of amyl, though entirely trustworthy in emergencies, is incapable of prolonged action. Trinitrin is in reality only a degree better. It takes longer to act than nitrite of amyl, and its effect is maintained for a longer period, but the relief it gives is ill-sustained and it cannot be frequently repeated. Thyroid extract seems to act beneficially in a good many cases, and where tachycardia is not yet present it may be tried with considerable confidence. In the high arterial tension which is so common at the menopause, some observers claim to have had good results with ovarian extract. The physiological basis for its employment is certainly sound, and if it does no good it can do no harm. Aconite has been recommended by some people and chloral extolled by others. The employment of both these drugs is, however, fraught with such obvious drawbacks that it is scarcely necessary to consider them.

THE ENTRANCE OF AIR INTO THE CIRCULATION.

The *Medical Record* under date of February 24, 1906, says that it is a matter of common belief that the entrance of air into the circulatory system is extremely dangerous, and may rapidly lead to a fatal issue. Most text-books on surgery and physiology have supported this view in their pages, the symptoms are carefully described, and a warning note is usually sounded with regard to the possible direful consequences of this accident. The fatal issue is attributed to the fact that the air finds its way into the right side of the heart, from which it cannot be expelled by the ventricular contractions, and interferes with the circulation to such an extent as to cause acute anemia of the brain, syncope, and death. These views have become so well established that any expressions to the contrary are almost revolutionary in their boldness, although the results of a number of investigations cast great doubt on their truth.

Among the latest investigations in this subject are those made by E. A. Larned (*Surgery, Gynecology, and Obstetrics,* December, 1905), who claims as the result of his animal experiments that air embolism is not necessarily fatal, or even attended with grave results. Some of his most conclusive observations were made in horses. In a number of these, increasing volumes of air, varying from twenty to two thousand cubic centimeters, were deliberately introduced in the veins. The most prominent symptom consisted of labored respiration, the degree of the disturbance depending on the quantity of air injected, but death itself could be brought about only by the continuous introduction of air under pressure, and in this instance it amounted to several liters. Several smaller animals were also experimented upon with similar results, and in only one case, in which 20 cubic centimeters of air was suddenly injected into a rabbit weighing two pounds, did death ensue. This quantity of air would roughly correspond to 450 cubic centimeters in a child weighing forty pounds.

A noteworthy feature in all these experiments was the train of symptoms similar to those associated with dyspnea. The air evidently entered the heart and stopped the circulation, or it passed on into the branches of the pulmonary artery, shutting off the blood-supply from some particular part of the lung, in this way producing dyspnea. If sufficient air is injected, the pulmonary circulation may be interfered with to such an extent as to cause death, but the entrance of a number of bubbles can do no more than temporarily close a few small branches, and then the absorption of the air by the blood takes place.

These experiments fully confirm the careful observations already made by Senn, Hare, and a number of other investigators in smaller animals, and show quite conclusively that the danger to life from air embolus is largely overestimated. The effects are in direct proportion to the volume of air introduced into the venous circulation, and the large amounts which are referred to in these experi-

ments are not likely to enter into the question in operative work. Less alarm need therefore be felt when, during the course of an operation in the vicinity of a vein, the peculiar hissing sound is heard which has been taken to indicate the entrance of air into the vessel, nor probably need any reproach be felt if a small bubble is accidentally injected with the hypodermic needle into the tissues. It seems to have been sufficiently well demonstrated that the belief that harm can result from such an accident is not well founded.

THE TREATMENT OF CEREBROSPINAL MENINGITIS.

The *New York Medical Journal* of February 17, 1906, contains an article by OSBORNE, in which he states that the treatment of cerebrospinal meningitis consists, there being no specific antidote to the disease or germ, in diminishing the congestion if possible, taking means to prevent or relieve cerebral or spinal pressure if possible, and combating all acute symptoms and complications as they occur.

Diphtheria antitoxin in cerebrospinal meningitis is theoretically unsound and practically a failure, if the large number of careful observations are to be considered authentic.

Spinal puncture has been proved not to be a curative procedure. It seems also not to ameliorate acute symptoms sufficiently often to make it a procedure always to be followed. There is also some slight danger connected with it. Also many punctures are made without the withdrawal of fluid. Injections of several antiseptic solutions into the cerebrospinal canal have been made, but none have been proved curative or even to ameliorate the inflammation. Spinal puncture is certainly positively indicated when there is cerebral pressure. As to whether it is indicated for diagnostic purposes only the author is very much in doubt except in rare instances. Not being as simple as an examination of the sputum in suspected pulmonary tuberculosis, or as the serum test in typhoid fever, also the treatment of cerebrospinal fever not being specific, and the treatment of all cases of meningitis being based on the same principles, also the diagnosis of a meningitis being generally most easy, the author fails to see the necessity for spinal puncture with that object.

The almost constantly sore throat at the beginning should be treated with antiseptic gargles and sprays, none better than the hydrogen peroxide solution. Conjunctivitis should be treated by simple boric acid drops. A calomel or saline purge should be given, as this is sensible in the beginning of all acute diseases, and more particularly where there is cerebral congestion. Painful joints, a frequent beginning symptom, should be wrapped with cotton and kept warm, and pain, generally the most early symptom, should be stopped with morphine by the mouth or hypodermically, depending upon its intensity.

If there is vomiting or repugnance to food, it should not be insisted upon for the first two or three days, as the patient is better without it. He should have plenty of water to drink if he cares for it. If the vomiting is frequent and the nausea severe, morphine hypodermically will, of course, stop it, and here the author emphasizes his belief that with severe pain anywhere morphine should be given in sufficient doses, whatever that dose may be, to stop it and hold it in check, and with the frequency that is needed. Nerve pains from cerebrospinal meningitis are exceedingly depressant to the heart.

If the pain is not severe and there is no vomiting, and if the pulse is good, the first day or two bromides or chloral may be administered, but certainly they should not be given more than two or three days. Coal-tar products the author does not believe give the kind of action that we want; they are too depressant and debilitating and act badly on the blood.

To quiet cerebral excitement and delirium and also pain, and to diminish the necessity for large doses of morphine—in other words, intensifying the action of the morphine that must be given—the author believes there is nothing in the materia medica that will compare with ergot. Physiologically it contracts the blood-vessels, and is of course indicated in cardiac weakness or with soft pulse and dilated arteries, but it also has a decided sedative action on the central nervous system, as it seems to contract and relieve congestion in the cerebral and spi-

nal vessels. A patient who cannot sleep even with large doses of morphine will generally be found to sleep well after a dose of ergot has been added. When the best action of ergot is needed it must be given intramuscularly or deep subcutaneously, and a pure, aseptic ergot must be used.

The best position for the injection is in the deltoid muscle, and if swelling or irritation occurs, a wet dressing should be placed upon the arm. Other injections should be given into the same muscle, dodging, of course, the points already punctured. This causes but one side of the body to be disabled, or sore, or painful. Of course, if the injections must be used long enough to make this arm too sore, the other arm must be used, or the calf of the leg. The author has never experienced an abscess from ergot in his own or in consulting practice. The frequency of hypodermic injections depends, of course, upon the symptoms. The author has given them every three hours, but he thinks the average frequency should be about one in six hours, unless there is great cerebral excitement or the pulse is very bad. An indication that too much ergot is being used is a very high pulse tension and a too greatly slowed heart.

The ice-cap to the head and the spinal ice-bag are very necessary, and especially an ice-bag to the back of the neck is of positive value. The writer keeps up these ice applications more or less constantly, depending upon the positive local discomfort they give the patient, unless the temperature is subnormal. If the temperature is subnormal or the surface of the body is cold, dry hot applications are certainly of advantage. While the author has had no experience with hot-water baths, he believes, theoretically, provided they can be given with a minimum of disturbance to the patient, they should at times do good. In other words, anything harmless that will bring the blood to the surface of the body and relieve the internal congestion in low temperatures in cerebrospinal meningitis is good treatment.

Ice, ergot, and morphine the author believes is the treatment that will save and has saved many patients from death in this disease.

The general care of the patient should be the same as in typhoid fever: a large, airy room, kept rather warm, if the weather is cool. The room should be light and sunny, the eyes properly shaded if the light is objectionable. The author does not believe in a darkened room for the treatment of these cases, except while they are sleeping. The patient should be kept very quiet, the nurse in attendance should be absolutely calm, there should be no bustling, and no talking should be done except what is directed toward the comfort of the patient. The care of the mouth and the body should be the same as in typhoid fever. The urine should be frequently examined to note albuminuria. The feet should be kept warm with a hot-water bag most of the time. The bowels should be moved daily, either with glycerin injections or with mild salines, unless the patient is too weak.

After the first few days the nutrition is very important, and expressed beef juice, raw eggs, and milk should be given sufficiently for positive nutrition, not, however, in excess, lest indigestion be caused.

SOME NEWER VIEWS OF THE PRINCIPLES OF INFANT FEEDING AND HOW THEY MAY BE APPLIED.

CHAPIN has contributed a paper to the *New York Medical Journal* of February 17, 1906, on this topic. He believes that in the future the subject will undoubtedly be presented on about the following lines: The infant needs fat, proteids, carbohydrates, mineral matter, and water, but in this respect does not differ from the adult. As the infant's digestive apparatus is not fully formed it needs these food elements in peculiar forms which are adapted to a developing stomach. Milk is the natural food for this period of development. As animals grow with different degrees of rapidity, and as their digestive tracts show wide differences in form and function, milks of different species of animals are not interchangeable either from a quantitative composition standpoint or in their digestive properties. Rearranging the percentage composition of cow's milk does not give it the properties of human milk. To make it acceptable to the infant the casein must be also modified. Just how this should be done is a matter for the physician to determine on the

spot and according to the nature of the case. It may be that when the stools are very curdy, the addition of lime water, sodium bicarbonate, or potassium carbonate to make the milk decidedly alkaline and thus change the casein into an alkaline compound that will not be acted upon by the rennet of the stomach, may be indicated; or sodium citrate may be added, or the milk may be peptonized. Under normal conditions it would seem better to mechanically alter the casein by the use of gruel diluents and allow the gastric function to be performed naturally.

When it is found impossible to nourish the infant by the use of cow's milk modified in any of these ways, recourse may be had to vegetable foods, as for instance the legume flour gruels, being careful to supply sufficient quantities of fats, proteids, carbohydrates, mineral matter, and water to insure proper development.

With such an idea before the practitioner, every case treated will be an education and tend to bring out clearly the indications for the different methods of feeding, and not foster the belief, already too prevalent, that there are no scientific principles involved in infant feeding.

In home modification of cow's milk there is one point that cannot be brought out too strongly, and that is the fallacy of attempting to work on a basis of creams or top milks of definite percentage composition. It has been taught that certain creams or top milks contained definite quantities of fat. This was undoubtedly the case with the specimens used, but milk and the methods of handling it vary greatly. Years ago milk was set in shallow pans to allow the cream to rise. To-day this is not done, but the terms employed under this method are not yet out of use. Next it was found that milk in tall, narrow vessels creamed better than in shallow pans, and the deep-setting process of creaming came into use and is seen every day in the rising of cream in quart bottles of milk. Then centrifugal creams appeared, and a new set of terms came into use. The terms applying to all three methods are used indiscriminately, and the peculiarities of each kind of cream are not generally known.

For home modification, bottled milk will be used to the exclusion of nearly all other kinds, and this fact might as well be recognized and the literature based on it. Cream varies with the kind of cow the milk is derived from, and no end of contradictory results will be obtained if a dozen quarts of milk are skimmed and the cream tested for fat. Then, again, milk from Jersey cows is much richer in fat than milk from other breeds of cows, and more cream will rise on such milk than on poor milk, so it is useless to look for the same amount of cream, or cream of the same richness, on every part of milk, or to expect that a certain layer of top milk will contain 8, 10, or 12 per cent of fat no matter what milk is used. Some milks will give a top milk containing 10 per cent of fat where a 6 per cent top milk was intended to be used. If one milk is twice as rich in fat as another, after the cream has risen, the top milk of one will be twice as rich in fat as the other. Many disappointing and confusing results are undoubtedly due to this cause, and as high as 9 per cent of fat in the infant's bottle, where 4 per cent was intended, has been the result of calculating that cream and top milks had definite compositions.

It is a very simple matter to avoid this difficulty and use any milk in home modification. Cream rises quite completely in milk bottles, which represents the deep-setting method of creaming. After the cream has risen the under milk contains usually less than one per cent of fat, and it has been found by a great many observations on all kinds of milk, as delivered to families, that the proportion of fat in the top nine ounces of a quart of milk, after the cream has risen, is about or almost exactly three times the percentage in the original milk; the top fifteen ounces is about twice as rich in fat as the original milk; and the top twenty ounces, one and one-half times as rich in fat. For instance, if the original mixed milk contained 3 per cent of fat the top nine ounces will contain 9 per cent, the top fifteen ounces 6 per cent, and the top twenty ounces will contain 4.5 per cent of fat. If Jersey cows' milk containing 5 per cent of fat was used, the top nine ounces would contain 15 per cent of fat, the top fifteen ounces 10 per cent of fat, and the top twenty ounces 7.5 per cent of fat, after the cream had risen. These various layers may be easily and accu-

rately removed by the author's cream dipper, holding just an ounce.

In practice the physician who felt that the fat in a mixture should be increased would use successively plain whole milk, then top twenty ounces, then top fifteen, and later top nine ounces for dilution. It is immaterial to him what proportion suits the infant; what he wants is an easy, accurate method of shifting proportion or quantities of fat. Proteids are easily regulated by varying the dilution of the milk.

Whenever a young physician who has been taught the method of using a top milk of supposed definite composition, of a certain layer or quantity, tests the milk he is using he generally finds that all of his fine calculations have been wasted, for his milk has not been what he was taught to believe it was, and it is not at all surprising that the whole subject is thrown aside in disgust, and a doubt as to the correctness of other teachings creeps into his mind.

PREVENTIVE TREATMENT OF SCARLATINAL NEPHRITIS.

The *Journal of the American Medical Association* of February 17, 1906, contains an article by LOWENBURG on this topic. He says that the patient should be placed in a well ventilated room, the temperature of which should be about 68° to 70°, and it should be kept uniform. If possible, a room of southern exposure is to be selected. Draughts and sudden changes of temperature are to be avoided.

A careful regulation of the diet is essential to the prevention of nephritis. The best diet for scarlet-fever patients is milk. It may be given modified to suit the age if the patient be a healthy, bottle-fed baby. If a nursling, maternal milk should constitute the sole source of nutriment. The milk is to be secured with a breast pump. Older children may be given whole milk or milk diluted with a cereal water, lime water, or Vichy. If digestion be weak the milk is best exhibited peptonized. However given, milk should be practically the sole article of diet for a period covering from four to six weeks, or until desquamation is complete. Experience bears out the observation of Jaccoud that an absolute milk diet is of great service in preventing nephritis. Fruit juices serve a useful purpose by rendering the urine alkaline, and they are very refreshing. Toward the end of the period of desquamation freshly cooked tender vegetables, fruits, and farinaceous substances may be cautiously added. Proteids may now be carefully given, and only in small quantities. These are gradually increased in quantity and quality as tolerance is established. Throughout the course of scarlet fever, from the beginning, and especially following each change in diet, the urine should be submitted to a careful daily analysis. On the appearance of the least trace of albumin a return to an absolute milk diet must be made at once.

Asked to designate any one single remedy which is of the greatest service in preventing scarlatinal nephritis, the author would unhesitatingly name water. Its free and continuous use is indicated for the reason that, by increasing the amount of urine, it dilutes toxins and diminishes the acidity, thereby lessening kidney irritation. By stimulating catharsis and diaphoresis the elimination of toxins is facilitated. Water can be employed with advantage in three different ways: by mouth, balneotherapy, and by enteroclysis, a combination of all of these methods being productive of the best results. It is the practice of the author to order a definite amount of water to be given with as much regularity as the food. It is best given between feedings. If plain water cannot be readily taken use may be made of the various mineral waters, as Poland or Celestins Vichy, or, better yet, it may be exhibited as lemonade or orangeade. To a pint of either of the last two may be added, with advantage, a teaspoonful of cream of tartar.

A daily bath, given with friction, is a valuable adjunct. Aside from being the only means to be employed to reduce temperature, it increases the capillary circulation of the skin and thus relieves internal congestion. The bath must be given carefully, otherwise serious chilling of the surface will ensue, and the purpose for which it was employed will be defeated. For this reason the full tub bath is best, the child, enveloped in a blanket, being completely immersed. A dry blanket is warmed and held ready to receive the patient when the bath is completed. This

is followed by free diaphoresis. If the full tub bath cannot be used, it may be replaced by sponging, care being taken to sponge only one part of the body at a time, while the rest of the surface is kept covered. The temperature of the water is regulated by the temperature of the patient. It should never be more than five or ten degrees lower. For young children and infants the warm bath is always desirable. Its effect on temperature is often amazing, and the diaphoretic effect is always beneficent.

Enteroclysis is a valuable prophylactic agent. From one to eight ounces of normal saline solution should be thrown into the rectum, to be retained, once or twice a day. It lessens thirst, reduces fever, prevents constipation, lessens toxemia, and allays renal irritation.

The only drugs which are of any value in preventing renal complications are alkalies and laxatives. Urinary antiseptics possess little if any controlling influence. The administration of urotropin is useless and expensive. The salts of the organic acids, as the citrate or acetate of potassium, are changed to alkaline carbonates in the blood and are eliminated as such in the urine. They thus overcome the acidity of the urine, thereby destroying an etiologic factor of some importance. They are given in the dose of five to ten grains. From the beginning of the attack and throughout the course of the disease minute doses of calomel should be given at intervals of every three or four days. These are best followed by broken doses of magnesium sulphate conveniently dispensed as follows:

℞ Magnesii sulphatis, gr. v vel x;
Ac. acetici diluti, min. v;
Syr. zingiberis, min. xx;
Aquæ dest., q. s. ad f℥j.

M. Sig.: A teaspoonful every two or three hours in water.

The specific organism of scarlet fever has not been determined. Of all the organisms found the streptococcus seems to be the one most often present. It is nearly always present in the discharge from an otitis media, and has been recovered from the renal tissue. For these reasons it is regarded by some authors as the primal cause of the complications. This view is accepted by Charlton, who, however, regards the presence of the streptococcus as the result of a secondary infection. For this reason he employs Moser's antistreptococcic serum early in the treatment of scarlet fever. Escherich and E. von Leyden comment favorably on the use of this serum for the control of the general symptoms, but assert that it does not influence the occurrence of complications. Moser himself believes that his serum has a beneficent influence on the grave forms of scarlatina, but that it does not prevent nephritis.

THE LOCAL APPLICATION OF ADRENALIN IN DISEASES OF THE SKIN.

Ravogli contributes to the *Lancet-Clinic* of February 17, 1906, a paper on this subject. He says that Baum has used adrenalin solution in the treatment of rosacea by introducing it into the skin through scratches of the epidermis made by rubbing it with sandpaper. He claims that from the resulting anemia the blood-vessels are rendered more perceptible and can be easily cut. The author has used and still is using adrenalin solution in rosacea, in nævus vascularis, and in telangiectasia, with gratifying results. He washes the nose and the cheeks with a two-per-cent carbolic acid solution so as to cleanse the surface, and the blood-vessels are cut through. He lets the blood flow for a little while, then the skin is washed again with the antiseptic solution, and immediately the surface is covered for five minutes with a piece of lint saturated in the solution of adrenalin. The surface becomes anemic, and for a while no more signs of rosacea appear. The skin looks yellowish-white in color, and the effects last between two and three hours. When the patient comes back the redness of the rosacea is always less, and he is greatly encouraged.

The author states that the use of the adrenalin has somewhat abbreviated the tedious and long treatment of rosacea. In two cases of rhinophyma, not of excessive proportions, he has practiced deep incisions in the substance of the hypertrophic skin with a Vidal scarifier, and has injected a drop of the 1 per 1000 solution of adrenalin into the deep tissues. With these applications the hemorrhage has been controlled, and a diminution of the congestion and of the redness has followed. Also some diminution in the

mass of the hypertrophic skin has occurred.

In his office practice the author finds the adrenalin very convenient to stop the bleeding after opening the acne pustules by pressing a small tampon dipped in its solution.

Jamieson has recommended the application of adrenalin as a preparatory treatment for the application of Finsen light, and has been followed by Buerman, Piffard, and Norman Walker.

Baum has used the adrenalin solution, nine parts with one part of 10-per-cent cocaine solution, applied by means of cataphoresis, in order to render the face less sensitive for small operations.

In a large and deep tubercular ulcer, the result of the destructive action of lupus of the ear, the author has used the applications of adrenalin solution in order to see if its action could in any way benefit the ulcerative condition. The result, however, has been negative, but it is always useful in controlling the capillary hemorrhages.

THE X-RAY TREATMENT OF RINGWORM.

To the *British Medical Journal* of February 3, 1905, SICHEL contributes the technical details of the *x*-ray treatment at Guy's Hospital as usually worked out:

1. The patient's scalp is kept 6 inches from the anode.

2. The tension of the *x*-ray tube is kept as nearly as possible at the equivalent of an electric spark of 3 inches in the air.

3. The amount of current in the secondary circuit is 0.20 to 0.30 milliampere.

4. Sabouraud's pastilles are used as a check.

5. The time—unless Sabouraud's pastilles have changed before—is not to exceed in some cases twenty, in others twenty-five, minutes.

6. A tightly fitting lint cap is fitted on the child's scalp, and on this is marked out an H, which divides the scalp into two lateral, a mediofrontal, and an occipital area. These areas are treated one after the other for the time specified, the spaces not exposed being protected by fairly thick lead foil, which is held in place by a coarse elastic net, a very useful little device, which was designed by Nurse Hill in the Actino-therapeutic Department, Guy's Hospital, London. The child is then seated as comfortably as can be in a chair and kept still during the radiation, which seems to exert a decidedly somnolent effect on most children. Most workers, it is believed, have obtained very constant results with Sabouraud's pastilles, but the writer asserts he is very sorry to have to admit that this is not his experience. Some seem to change much more quickly than others.

7. With light-haired, delicate-looking children, the shorter limit of twenty minutes is sufficient; with dark-haired, strong, and older children, and in cases of parasitic alopecia areata, the limit may be extended to twenty-five minutes.

The careful attention to all these details requires much patience on the part of the nurse, and a single treatment with the head divided into four parts takes about two and a half hours.

The author here refers to the method introduced, he believes, by Dr. McLeod, of Charing Cross Hospital, of attempting to obtain an exact dosage of *x*-radiation by means of measuring the interruptions in the primary circuit. The method is a distinct advance, and an advance, too, on scientific lines, but it is yet too early to know if this is the last word on the subject. Speaking with due deference, it seems that while it is a very beautiful and exact method of regulating what goes into the tube, it is really only an indirect way of estimating what comes out of it.

Professor Schiff, perhaps the greatest exponent of *x*-radiation living, visited the writer at Guy's Hospital. He told him that he had not found Sabouraud's pastilles reliable enough to be an absolute criterion, and that he relied on the visual appearance presented by the phosphorescent tube when excited, and his experience, when ordering the length of time the sitting should take.

The author says enough to show that the *x*-ray treatment of ringworm is by no means perfect as yet; it must still be considered on its trial. So long as cases are treated by those who thoroughly understand the dangers likely to be met with, perhaps the method may be recommended; but it should be thoroughly understood that until we have an exact regulation of the *x*-rays, and until *x*-ray

tubes are far more stable than they are at present, it is not a treatment that is absolutely free from danger, which if remote is at the same time real.

SYMPTOMS AND TREATMENT OF GOUTINESS.

LEONARD WILLIAMS in the *Clinical Journal* of February 7, 1906, says of the treatment of gout that there is no objection to an initial dose of calomel (say two to three grains)—it is an excellent measure, especially in sthenic cases—but the practice of a sustained exhibition of hepatic stimulants is much to be deprecated. It was introduced in conformity with the theory that gout in all its forms was due to some dereliction of duty on the part of the liver, which could be counteracted by stimulation of that organ. As this theory is very far from being established, and as the continuous administration of cholagogues has well recognized drawbacks, the practice is not to be recommended. In gouty conditions the liver, together with all the portal radicles, requires unloading, but this may be done quite efficiently with small doses of calomel (gr. j), podophyllin (gr. ss), iridin (gr. ij), or euonymin (gr. j).

The excretory organs to whose action the greatest importance is, in this connection, universally attached are the kidneys. It is the purpose of the author to avoid, as far as possible, expressing an opinion about any of the theories concerning the causation of gout; but it is safe to admit that uric acid, the biurate of sodium, and the quadriurate of sodium are all, in a measure, actively engaged in producing the symptoms of the complaint, and as these substances are normally excreted by way of the kidneys it is obvious that anything which tends to increase renal activity will materially aid the discharge of these matters and thus lessen the incidence of the manifestations. The importance of fluid, which, as already stated, is considerable in the case of all the excretory organs, is here paramount, and water must therefore be exhibited in full quantities. As aids to its discharge by the kidneys rather than by any other route, it is well to have recourse to diuretics.

There are diuretics, such as digitalis and scoparius, which act by increasing the general blood-pressure, including that in the kidneys. As will appear later on, the blood-pressure in the gouty already rules over-high, so that such drugs are carefully to be avoided. The routine prescription of digitalis, bad as it is in cardiac disorders, becomes in conditions accompanied by high arterial tension something in the nature of a therapeutic crime. It increases the arterial tension, and acts as a diuretic only when edema is frequent. For diuretics in the gouty state, then, we must look to those which increase the renal activity without raising the blood-pressure—such, for example, as the salts of potassium, the infusion of buchu, and theobromine. Fothergill says that buchu has upon the urinary passages the same inexplicable soothing influence which bismuth has upon the digestive apparatus. This the author believes to be true, and it has often seemed strange to him that so valuable a drug should recently have fallen into disuse. It is by no means unpalatable, and it increases very conspicuously the functional activity of the kidneys. Of the salts of potassium, those which are most used are the citrate and the bicarbonate. No one now gives these salts in the vain hope of increasing the alkalinity of the blood so as to obtain the solution of uratic deposits. But whatever the motive with which they are given, there can be no doubt either that they exercise a beneficent action over the symptoms or that they increase very materially the renal activity. It is probable that such merits as these and all other alkaline salts may possess are due mainly, if not entirely, to their action as diuretics, and that the salts of sodium, even though they be, as some are still found to maintain, wrong in theory, are useful in practice, owing to their possessing a similar eliminative action.

To insure the adequate discharge of the excreta from the kidneys, we have then to see, first, that enough fluids are being taken. The importance of this is so obvious that it seems absurd to dwell upon it, and in reality the author's only reason for so doing is to point out that the rule is liable to an exception. If there is too much fluid in the vessels, the urine is scanty because there is undue pressure in the kidneys. In such circumstances

to increase the amount of fluid ingested is to decrease the amount of urine excreted. If, therefore, after a few days the urine fails to increase in quantity, the fluid should be decreased until the urine flows freely. The next thing to do is to construct a prescription which will include such diuretic drugs as will assist in the discharge of this fluid by the renal route. If the cachet be discontinued, we can include its most important ingredient, the iodide of potassium, in this prescription, which would then be as follows:

Potassium iodide, gr. x;
Potassium citrate, ℥ss;
Infusion of buchu, q. s. ad f℥j.

M. Sig.: Ter in die.

If, as is not altogether infrequent, the patient be anemic, five to ten grains of the potassio-tartrate of iron may suitably be added to this mixture, which should be taken immediately after the three principal meals of the day.

There is another time-honored drug which is not used as frequently in these conditions as it might be: this is spirit of nitrous ether. When combined with citrate of potassium and acetate of ammonia, as in the following formula, it makes a useful and agreeable mixture, increasing notably the flow of urine and acting to some extent as a diaphoretic:

Potassium citrate, ℥ss;
Spirit of nitrous ether, f℥j;
Solution of ammonium citrate, f℥ss;
Aquæ, q. s. ad f℥ij.

M. Sig.: Take in a tumblerful of water three times a day.

In connection with spirit of nitre it is important to remember that it must not be combined with iodide of potassium, as the result is an explosive mixture.

THYROTOMY VS. LARYNGOTOMY.

JACKSON (*Medical News,* Dec. 9, 1905) calls attention to the frequently malign nature of chronic hoarseness. He considers the time spent in acquiring skill in endolaryngeal operation for malignant disease as utterly wasted, for, while failing to extirpate the growth entirely, it induces local spread and metastatic deposit. The writer reports two cases which illustrate his views and concludes as follows:

The patient with cancer of the larynx must have his disease discovered early, else a cure is well-nigh hopeless.

If discovered early the comparatively slight operation of thyrotomy will cure.

If discovered late, total or partial laryngectomy will probably prolong life for a variable period, but recurrence is fairly certain, and the short extension of existence lacks many pleasures and comforts.

The early curable stages of laryngeal cancer are characterized by nothing but hoarseness, which may disappear and recur. Cough, odor, pain, odynphagia, glandular involvement, external swelling, emaciation, cachexia, etc., are present only after the curable stage is passed.

The curable case may come in "to get something for a cold that he cannot shake off," without any idea of a serious condition, and throw us off our guard.

Although the surgery of malignant diseases is discouraging, it is, in the larynx, only so when seen late. In early thyrotomized cases the prognosis as to cure is better than it is in chronic laryngitis.

THE USE OF SHEET PARAFFIN IN LESIONS OF THE NOSE.

MORAWECK and HALL (*Journal of the American Medical Association,* vol. xlvi, No. 8) as a means of preventing postnasal adhesions following operation either with the cautery or the knife suggest intranasal paraffin splints, which can be readily molded the desired size and completely and easily sterilized. After cautery work, which is practically all confined to the inferior turbinate bone, one of these sheet splints is applied over the full length of the burn, care being taken not to push it too far back. The first splint is left on for four or five days, the patient reporting each day, when the area can be cleansed without removing the splint. On the fifth day the splints are removed, the site of operation thoroughly cleansed, and new splints are inserted. These splints should be left in until the mucous membrane heals. After submucous resection of the septum the Bernays splints are used for the first forty-eight hours, after which they are removed, and the paraffin, cut in the shape of the Bernays splints but slightly longer, are inserted. These splints are introduced one on each side, and are held in place by a little gauze packing, which is removed as

often as it is soiled. After turbinectomy gauze tampon packing is applied immediately as the only safeguard against hemorrhage. The packing is removed in twenty-four to forty-eight hours, and if the nose be very narrow, or if there seems to be any chance of the postoperative swelling bringing the raw surface in contact with the septum, a paraffin splint is inserted as wide as the nares will admit. In these cases the most extensive and troublesome adhesions take place, hence it is important to allow the splints to remain in position till the wound has thoroughly healed. In septal deformities, spurs and ridges, especially when a submucous operation is performed, the paraffin splint is inserted, as it holds the flaps of the membrane down in position.

CHOLECYSTECTOMY, WITH A REPORT OF TWENTY-SEVEN CASES.

ERDMANN (*New York Medical Journal*, Feb. 24, 1906) holds that the time of repair and convalescence is shortened very markedly by cholecystectomy as compared to cholecystotomy. An incision of 4 to 7 inches is ample. The danger of hernia from a split rectus muscle is remote.

Twenty-two of the twenty-seven patients were females, the youngest being twenty-seven and the oldest sixty-six. Two deaths occurred in the series, both in non-suppurative cases. The first death was from exhaustion in eight days after operation; the second death occurred shortly after operation with persistent black vomit. The appendix was removed in sixteen out of the twenty-seven cases, being markedly involved in several instances. In five of the cases the common or hepatic or both ducts were opened for stones. Twenty-two cases were for acute inflammatory conditions. All recovered. Stones were present in all but one case.

Indications for the operation are perforation, obliteration or stricture of the cystic duct, chronic cholecystitis with thickening, as well as atrophy, gangrene, acute suppuration, marked adhesions, hour-glass contractions, chronically recurring cystitis, and malignancy. Contraindications are apparently healthy bladder and cholelithiasis, perforations in other viscera, and perforations of the suppurative variety when the adhesions are extensive and life would be jeopardized by radical interference. In the absence of infection the external wound is closed without drainage, and in all cases the appendix is removed when the condition of the patient is such as to allow five minutes longer interference, providing the immediate tissues surrounding the gall-bladder are not in a marked inflammatory state. The operation is simple, shortens postoperative convalescence, eliminates the likelihood of secondary operations, dispenses with a viscus, dangerous to the owner when once infected.

THE PREVENTION OF APPENDICITIS.

ILLOWAY (*Canadian Practitioner*, March, 1906) holds that constipation, temporary or habitual, is in the majority of instances the cause of appendicitis. He believes that by removing the constipation appendicitis may be prevented. By relieving constipation he does not wish to be understood as advising purgatives to provoke evacuation, which is followed by a still more obstinate constipation, but he advises a restoration of the intestinal tract to its original vigor so that it can empty itself with regularity and spontaneously of its own volition.

INCONTINENCE OF URINE: ITS TREATMENT BY THE ISOLATED INDUCTION SHOCK.

ROCKWELL (*Medical News*, Dec. 9, 1905) believes incontinence in most cases to be due to muscular atony, which results in failure of the external sphincter to properly functionate. This atony is due to incomplete development of the perineal striated muscles and the external sphincter of the urethra. Formerly the author used the galvanic current for the treatment of this condition, but within the past few years has substituted currents of slow interruption for the rapid vibrations of the high tension coil, with better results. The interruptions are made at the rate of one or two a second. In very young children the treatment is applied externally, although the best results are obtained by the introduction, when possible, of an olive-shaped electrode connected with the negative pole until it

reaches the sphincter muscle. The indifferent electrode is applied to the abdomen or sacrum. In the treatment one must be guided in great measure by the sensations of the patient, but if the shocks are slight at the beginning they can be gradually increased without difficulty. Of fifteen cases treated by this method, seven have been completely cured, four greatly benefited, and four have disappeared from observation.

FRACTURES OF THE TUBEROSITY OF THE FIFTH METATARSUS AND THE POSTERIOR PROCESS OF THE ASTRAGALUS.

Of the 600 cases of all fractures which LILIENFELD (*Archiv für klinische Chirurgie*, Bd. 87, Heft 4) has treated during the past four and a half years, five involved the tuberosity of the fifth metatarsus. Golebiewski observed three cases of the same fracture in a total of 56 fractures of the foot, 11 of which were confined to the metatarsus.

This fracture very commonly escapes diagnosis and is treated for a contusion or sprain, but it gives characteristic symptoms, and once the attention is directed toward the possibility of fracture the diagnosis is easy.

In three of the five cases the fracture occurred while the patient was descending a ladder or flight of steps in which the last rung or step was absent, and the outer edge of the foot came forcibly in contact with the ground.

In one case the fracture was caused by a weight falling on the foot, and in the fifth case it was caused by a wagon wheel. In all these cases fracture was caused by direct violence, but it seems possible that a violent pull on the tendon of the peroneus brevis might cause a splitting off of a fragment of the bone.

In all five cases, although three did not come under observation until several weeks after the injury, a positive diagnosis was made on the basis of localized tenderness and swelling over the tuberosity. Diagnosis was confirmed by the *x*-ray, which showed a slightly concave line of fracture in each instance.

At first treatment should consist of rest in bed. Later the patient can go about cautiously. Massage should be employed early. Bony union is to be expected, and usually is sufficiently strong to permit of the foot being used in six weeks. If not diagnosed and the patient is permitted to use the foot, pain, tenderness, and swelling persist for weeks or months.

Of the 600 cases treated by the author, 70 involved the malleoli, 25 the calcaneus, 7 affected the posterior process of the astragalus only, and 5 the posterior process in conjunction with fracture of the calcaneus, while 5 were situated in the calcaneus alone. These figures cover only those cases in which there was no doubt to to the diagnosis. There were some other cases of fissured fracture in which the *x*-ray picture of the clinical evidence was indefinite.

Fracture of the posterior process of the astragalus is caused by its compression against the os calcis when the patient falls on the heel with the foot in plantar flexion. The patient usually continues working for some hours or days, until pain and swelling become sufficiently severe to cause him to see a physician. Diagnosis of the fracture is possible, but not always certain. The suggestive symptoms are deep localized tenderness and obliteration or swelling of the normal hollow on the outer surface of the joint at the side of the tendo Achillis. The tendon itself on the affected side is more concave just above its insertion than its fellow. The *x*-ray affords the only absolute method of diagnosis. The plate should be placed along the outer surface of the foot.

The foot should be kept at rest for eight to ten days, and thereafter medico-mechanical treatment combined with massage should be ordered. All of the writer's cases were old fractures when they came under observation, and bony union did not occur in any of them.

ENTEROPTOSIS IN WOMEN.

VISSCHER (*Southern California Practioner*, No. 2, 1906) writing on this subject states that the liver is the real hub in enteroptosis, quoting Einhorn to the fact that a movable liver can be found to some degree in over three per cent of all persons with indigestion. He inveighs especially against the corset as a means of inflicting chronic and recurring trauma.

With regard to the diagnosis differen-

tiation is needful between the atonic and dilated and the displaced stomach. It may be stated that the stomach is atonic when it requires more than seven hours for the transfer of Riegel's mixed test meal; it is dilated when it contains food in the morning hours after a night's fast; it is displaced only when the lesser curvature can be outlined. The tenth rib is often found movable or floating, considered by Stiller as a congenital ptotic and neurasthenic stigma.

Langenhagen has described a false movable kidney, the tumor in one instance being due to a kinked hepatic flexure, and in another to an intussusception.

The essential pathological conditions of enteroptosis are inanition and lowered intra-abdominal pressure, the symptoms being displacement, traction, sacculation, disturbed function of peristalsis, blood stagnation, and disturbed splanchno-sympathetic nerve function. Inanition does not necessarily imply leanness, nor does a flabby abdominal skin with no preperitoneal fat necessarily indicate enteroptosis. This condition may be present in either the fat or the lean. The enteroptosis has a distinct deleterious effect upon the pelvic organs not only by direct pressure but by hampered returning circulation. As to prophylaxis, outdoor life and active exercise are advised.

In the treatment horizontal rest is suggested as a means of relieving impeded venous circulation in the misplaced organs, overcoming stretching, tension, and angulation of the mesenteric veins; further, enforced overfeeding, thereby increasing tension, accumulating fat, and giving sleep to the worn-out nervous system. This should be supplemented by light abdominal massage and by general massage. Patients should repeatedly during the twenty-four hours have the foot of the bed raised and assume the knee-chest position. Electricity is serviceable. The diet must be selected in accordance with the condition of the gastric secretion. Active purgation is to be avoided, and a low abdominal corset, leaving the ninth and twelfth ribs free from any pressure, is to be worn.

Rose's plaster bandage has given good results. Surgery is not advised excepting for the cure of obvious pathological lesions, such as hernia, movable kidneys accompanied by Dietl's crises, or repeated attacks of jaundice. The enteroptosis cannot be cured by surgery, even though the stomach, colon, and liver be stitched up at the same time. Indeed, the author rather accuses the surgeon of encouraging enteroptosis by letting patients up too soon after childbirth, panhysterectomy, removal of tumors, or the operation for appendicitis, or of allowing patients to be underfed or improperly fed, filled with wind as to their abdomens, drained by saline purges, and riddled by laxative pills.

The treatment of enteroptosis means rebuilding of the organism, which means the blood and fat. We do that by air, exercise, rest, feeding, bandaging, electricity, drugs; during a long time; not by knife, thread and needle in a jiffy!

THE RELATION OF LACERATION OF THE CERVIX TO THE DEVELOPMENT OF CANCER.

WEST (*Yale Medical Journal,* November, 1905) states that he has never seen a single case in which carcinoma had developed in the uninjured cervix. Every case has been distinctly traceable to one which had been injured. He quotes Craig to the effect that investigation of the subject does not reveal evidence of a single case of carcinoma occurring in a successfully repaired cervix, excepting where trauma had subsequently occurred, while Smith notes that cancer has nearly disappeared from his clinics simply because women are no longer allowed to go around with the cervix full of scar tissue. West notes that the majority of patients who present themselves with this disease have already passed the operable stage, and that even in those who still appear to be operable, although the prognosis as to recovery from operation is good, prospect of a radical cure is absolutely nothing. One surgeon is quoted as having operated 200 times for cancer of the cervix with a universal record of return. None the less it is stated that all cases offering even faint hope should have the benefit of a combined vagino-abdominal hysterectomy with removal of tubes and ovaries and as much of the broad and round ligaments and adjacent tissues as possible within the limits of safety.

Since early diagnosis is absolutely

imperative for any success every practitioner should be perfectly familiar with the first symptoms of the affection. These are leucorrhea or serous discharge, not necessarily with bad odor, and irregular bleeding. Pain is not often present. Hemorrhages and chocolate-colored discharges with bad odor are symptoms of advanced stages.

PYLOROPLASTY.

FINNEY (*Surgery, Gynecology, and Obstetrics,* February, 1906) records the results of his three-years' experience with the operation which he devised for the relief of symptoms incident to pyloric obstruction. He has operated on 33 cases, in which are included instances of dilatation of the stomach, dense adhesions, hypertrophy and cicatricial thickening of the stomach wall, acute and chronic ulceration, hemorrhage, pylorospasm, etc. He believes the operation offers greater advantages in pyloric stenosis of benign origin, from whatever cause, than does the operation of gastroenterostomy. It is equally efficacious in the presence of a bleeding or active ulcer. The one contraindication is atonic dilatation of the stomach in nervous patients, particularly when associated with a dilated duodenum. For this particular condition, however, Finney is not familiar with any operative procedure which offers adequate relief to the patient. Finney performs gastroenterostomy only in cases of inoperable carcinoma, or after pylorectomy. He has performed pyloroplasty many times in the presence of adhesions and cicatrical tissue of the densest character, and has thus far met with no case in which it was not perfectly feasible, since it is always possible to free the duodenum sufficiently to allow of its being brought out readily into the wound. In some cases he excises dense cicatricial tissue from the anterior gastric or duodenal walls. Where there is much hypertrophy about the pylorus in cases of chronic ulcer it is better to perform pylorectomy and excise this whole area, leaving the operation of pyloroplasty for those cases in which a moderate degree of cicatricial hypertrophy is present. He has performed the operation in the presence of active hemorrhage three times, with complete relief of symptoms. It is admirably adapted to those cases in which the pylorus is situated high up, he holding that it is not necessary to have the lower border of the pylorus on a level with or below the lower border of the greater curvature. The relief of the obstruction by providing a pylorus of ample diameter seems to be all that is necessary. He usually makes an opening about 10 centimeters in diameter. He has not found a single case in which there was not marked relief from symptoms.

In a series of 33 cases there were three deaths, none from the operation itself. One died on the sixth day from diabetic coma. Autopsy showed perfect healing of the wound; no peritoneal irritation. The second died in the third week, from a pneumothorax following the lighting up of an old tuberculous process in the lung. The stomach symptoms had been completely relieved, and the patient was eating anything. The third case died on the fifth day, incident to a marked dilatation of the duodenum with extreme obstruction to its lumen where it passed under the mesenteric vessels.

In all cases the wound condition was perfect.

A GRAPHIC METHOD OF RECORDING MENSTRUATION, ETC.

The importance of loss of blood from the uterus in the diagnosis of cancer of that organ and the difficulty of getting exact menstrual histories have led DE SEIGNEUX (*Centralblatt für Gynäkologie,* No. 9, 1906) to prepare a chart for the graphic record of all menstrual and intermenstrual hemorrhages.

The chart, which covers a period of one year, is divided transversely into 365 spaces (one for each day) and longitudinally into four, marked respectively ½, 1, 2, and 3. For convenience in reading each five days is separated by a heavier line, and each month by a still heavier. Whenever there is any loss of blood the corresponding day is blacked in to line 1 if it is a normal menstrual loss, to line ½ if it is slight, and to line 2 if abnormally great. A birth or abortion is drawn up to line 3. If there is pain, a cross is put under the corresponding day, and if it is severe the cross is

underlined one or more times according to the severity. A whitish discharge is shown by a horizontal line above the chart.

Such a chart gives complete information as to: (1) The regularity of menstruation; (2) the duration of each period; (3) the length of the interval; (4) the amount of blood lost; (5) the amount, number, and chronology of all atypical hemorrhages; (6) whether the period is accompanied by pain, and on which day these occur; (7) whether there is pain between the periods; (8) the severity of such pains.

Such a chart should be given to each gynecologic patient at the first visit with instructions to bring it at least once in three months for inspection. As the first symptom of carcinoma uteri is always irregular bleeding, such a chart would give an exact knowledge of such irregularity and arouse the physician's attention in time for the operation to be performed with success.

The author believes that similar charts will some day be in as general use as temperature charts are to-day, and that women will go every few months to a gynecologist to "see that everything is in order" just as many persons go regularly to the dentist to-day.

OPERATION FOR INGUINAL HERNIA UNDER COCAINE ANESTHESIA.

McGUIRE (*Virginia Medical Semi-Monthly*, Feb. 26, 1906) says that patients object to operation for hernia chiefly because of dread of a general anesthetic. The writer has operated upon ten cases of inguinal hernia with cocaine anesthesia, and believes that cocaine should be used in all cases of inguinal hernia unless there are special indications for the use of a general anesthetic. In nine of the cases the patients talked with the nurses and suffered practically no pain; one made considerable outcry, but admitted afterward that he was more scared than hurt. In all cases the wound healed by first intention and the patients were permanently cured. The credit of introducing this method is given to Bodine. The essential features are the intracuticular injection of a one-fourth-per-cent solution of cocaine along the line of incision, and the blocking of the hypogastric branch of the iliohypogastric, the inguinal branch of the ilioinguinal, and the genital branch of the genitocrural nerve by injection of one or two drops of the solution into their trunks. The patient with hernia can be told that he can be cured without appreciable danger, pain, a general anesthetic, more than two or three weeks detention from business, and without much question of permanency.

AN INTERMEDIATE HOST FOR THE PARASITE OF CANCER.

Being convinced of the parasitic nature of cancer, but unable to grow the parasitic organism in pure culture, SCHMIDT (*Münchener medicinische Wochenschrift*, No. 4, 1906) describes how he attempted to grow the organism in connection with various low plant forms, and finally found in a culture of mucor racemosus obtained from a tumor certain sporangium-like bodies which differed from the plant spores in that they were somewhat smaller and retained the stain by Gram's method. The best cultures were obtained anaerobically in gelatin. These spore capsules sometimes burst, and the bodies escaping showed independent motion and resembled the forms described as parasites in cancer, the ameboid form occurring, however, only rarely. After two to three weeks such spores and cysts are found in large numbers in the culture medium. Mucor racemosus obtained from other sources showed no such bodies, but if its spores were injected into a tumor, specimens of the tumor showed in a few hours the spores germinating and bearing similar cysts. Of 100 animals injected with mycelium bearing such cysts, only six developed tumors at the site of inoculation, but this number is larger practically than appears, because many of the animals died of pneumonia and several were killed before the time of incubation, which lasts about five months, had passed. Injection of fluid in which these cultures of mucor and parasites have grown, after filtering them and sterilizing by heat, causes a reaction like that of tuberculin injections in tubercular subjects, this reaction being only seen, however, in persons or animals affected with cancer, and not in normal. This adds considerable weight to the idea that the parasite in question is the exciting cause of cancer.

Of the six animals which developed tumors, one showed benign adenoma and the other five malignant tumors with metastases. Of these three were of the "Jensen" type, the nature of which is still doubtful, one was an alveolar carcinoma, and the others spindle-cell sarcomas. The fact that the tumors differed in nature shows that it is not due to transplantation of tumor cells as such. These animals were rats and mice, and four of them were males, in which spontaneous tumors very rarely if ever occur.

INTRACRANIAL LESIONS AS SEQUELAE OF CHRONIC PURULENT OTITIS MEDIA.

STARR (*Medical Record,* March 10, 1906) states that the ordinary sequelæ of cerebral complications are abscess of the brain, meningitis, sinus thrombosis, and acute encephalitis. The latter consists of a limited area of hemorrhagic softening of the brain, and may be confined to the domain of one arterial branch. After the patient recovers a sclerotic patch of greater or less extent is produced. In none of the cases did incision reveal pus. The symptoms are similar to those of abscess—*i.e.,* fever, slow pulse, stupor, and disturbances such as sensory or motor aphasia, monoplegia, facial or brachial paralysis, or cortical epilepsy. Optic neuritis, as irregularity of the pupils, vertigo, or headache, are all absent. Symptoms of cerebral abscess are generalized or local headache of severe or constant type; a marked change in the mental state, characterized by dulness, irritability of temper, imperfect power of attention, defective memory, and a feeling of depression; tenderness of the head to percussion, and in some instances a change in percussion tone over the affected side; abnormal temperature; non-pathogenic pulse varying with temperature, in meningitis slow, in abscess becoming slower; facial palsy, which if peripheral is on the affected side, if central on the opposite side; optic neuritis, which does not develop until late; and initial contraction of one pupil, followed later by permanent dilatation, which is a frequent sign of abscess, but is, however, not a constant symptom. As helps in the diagnosis Starr refers to the examination of the cerebrospinal fluid and the blood. Meningitis enormously increases the number of leucocytes in this fluid. In abscesses, however, the leucocyte count is not so markedly increased, excepting where there is a complicating meningitis; nor are microörganisms found. Blood examination is valuable, since the leucocytosis of uncomplicated otitis media is moderate; sudden and enormous increase is suggestive of meningitis. A rapid rise in the ratio of the polymorphonuclear leucocytes is indicative of cerebral complication.

Where cerebral abscess is positively diagnosed it is imperative to open the skull at once, since even if the case prove to be one of meningitis the fatal termination is not hastened by the procedure. There should be a large field of operation, the opening of the skull being three to four inches in size, preferably of omega shape. The dura should be incised carefully and turned back. Many abscesses lie a centimeter or more beneath the surface, and may be indicated by the sense of softening or by venous congestion at one point in the pia. If the abscess is not indicated in this way it is justifiable to make a deep incision of the brain. The incision should be along the summit of a convolution in its long diameter, the incised surface being separated by two broad, flat spatulæ, which thus enable one to gain access to the deeper part. These abscesses should be emptied by gravitation, the incision being kept open during the operation either by the spatulæ or by an expanding ear speculum. The subsequent drain should be of decalcified bone or folded rubber tissue.

If a diffuse encephalitis is found it may be either left alone or the softened area may be removed by excision. The excision should extend to the limit of the degenerated area, and the walls left should be normal brain. Hemorrhage can be stopped by gauze tampons held for some minutes in the cavity, to allow firm clots to form in the vessels. During the entire operation very hot water should be run constantly over the surface of the brain. If meningitis is found and no abscess a drain may be inserted. When the abscess has been drained the dura may be united, excepting at the posterior inferior angle or corner of the opening, where the drain is to be brought out. At this point an opening may be made in the

skull, providing this has not already been accomplished by the trephine, of sufficient size to insure free drainage. Starr's statistics show that the results of surgical treatment of the intracranial complications of otitis media have been more and more favorable as the details of operative technique have been improved. In almost every instance the operation has been unduly postponed. In the majority of cases it is evident that the operation was badly done, the incision being too small or badly located and the drainage being imperfect. Of the cases which died, meningitis after the operation was the usual cause of mortality. In the cerebellar cases few characteristic cerebellar symptoms were present, and in 14 of the 25 cases the cerebellum was investigated after the temporal lobe had been found normal.

CHOLEORRHAGIA AFTER CHOLECYSTOSTOMY—CURE BY DIET.

GROSS (*Centralblatt für Chirurgie,* No. 7) strongly recommends the method of Patel of frequent feedings to prevent the accumulation of bile. He reports only one case treated in this way by feeding every three hours day and night, but the flow ceased so rapidly that he considers the method worthy of recommendation. The first day of frequent meals the flow was less than half that previously seen for the two weeks after the operation, the next day there was very little, and after that none at all. Nine days after he was discharged, and five days later the fistula closed.

EXTROVERSION OF THE BLADDER.

MOYNIHAN (*Annals of Surgery,* February, 1906) has successfully treated a case of exstrophy of the bladder by transplanting this viscus into the bowel. A patient nineteen years old had been subjected to the ordinary flap operation, as a result of which a bridge had been formed over the upper part of the exposed mucous surface. The lower part of the bladder mucosa was, however, still exposed. In the operation the ureters were first catheterized, the instrument being passed for four inches into each ureter and fixed by a single stitch, which caught up the tube on one side and the bladder on the other. A vertical median incision was then made from the exposed bladder mucosa toward the umbilicus, the flaps which had been turned over to the middle line in the previous operations being completely cut through. On turning aside the flaps thus made the upper, previously covered, mucous surface of the bladder was found to be smooth, thin, and entirely different in character and appearance from the lower exposed part. An incision all around the margin of the mucous membrane of the bladder was now made between the mucosa and the skin, and the incision was deepened by degrees until a good thickness of the bladder could be raised up. The dissection from the margin of the bladder toward the ureters was continued around the whole circumference. This was difficult, particularly in that part above the pubes, partly because of scar tissue and partly because of greater vascularity, and the difficulty encountered in freeing the prostate. The whole bladder was finally freed, leaving as its pedicle the two ureters with as much tissue around them as possible. The bladder after having been isolated was drawn upward toward the umbilicus and there held, exposing at the bottom of the wound the rectum, below the peritoneal reflection on to it. The serous covering was stripped upward from the front of the rectum until four or five inches of the bowel lay exposed at the bottom of the wound.

The finger of an assistant was passed into the rectum to make it prominent along the anterior surface of the bowel, and an incision about 3½ inches long was made. Into this opening the bladder was placed, being turned upside down so that its former anterior surface became posterior, and its former lower end became the upper. The ureters instead of passing forward to the bladder passed backward, the catheters being introduced into the rectum and brought out from the anus. The edge of the bladder and the cut edges of the rectum were sutured together by two stitches that were continuous, one taking the right side and the other the left. The Lembert sutures were so used that no mucous membrane was included in them. A few interrupted sutures were applied here and there.

When the sutures seemed to be securely uniting the bladder and the rectum, the wound was dried and the skin edges along

the original median incision were drawn together. At the upper end the edges came well together, but about an inch at the lower part had to be left open. The operation lasted an hour and a half.

The catheters remained in the ureters for four days, the urine being collected in a bottle. After their removal urine passed into the rectum and dribbled out at the anus, which, owing to the stretching of the sphincter, as yet exerted no control. The seventh day a little urine began to leak by the abdominal wound, and this continued for a week. The fifteenth day an anesthetic was administered, and the leaking point in the former line of suture discovered and made good. Thereafter the wound remained dry, all urine escaped by the rectum, and control gradually returned, until at the end of a month it was perfect. Urine then passed by the rectum about every two hours. At the time of reporting (eight months later) the shortest period of retention was three hours, the longest five, and the urine was entirely normal on examination. Proctoscopic inspection fails to show a line of demarcation between the mucous membrane of the rectum and that of the bladder.

GRANULAR OPHTHALMIA—TREATMENT BY RADIUM.

Several cases of trachoma were cured by DARIER (*Revue de Thérapeutique*, No. 4, 1906) by the application of radium to the inner surface of the everted lids. The eyeball was protected by a shield of lead, glass, or enamel, and a tube of glass containing 2 milligrammes of radium bromide was held against the lid for five to ten minutes daily. On the lower lid the granulations disappeared in seven to eight days, on the upper in fifteen days. There was some hyperemia of the conjunctiva, but no secretion. After fifty-six days all the granulations had disappeared except a few in the semilunar folds. There was no destruction of epithelium, no ulceration, no scarring. Specimens of the lid excised showed a complete absence of granulations, in the place of which were fibrous masses, including small masses of cells. The epithelium was thickened, and the blood-vessels, although enlarged, were often obstructed by polynuclear leucocytes.

INTERMITTENT HYDROPS OF THE GALL-BLADDER DUE TO OBSTRUCTION OF THE CYSTIC PASSAGES.

Under the term of "Intermittent Hydrops of the Gall-bladder due to Obstruction of the Cystic Passages," VILLARD and COTTE (*Revue de Chirurgie*, No. 2, February, 1906) describe a symptom-complex characterized principally by two groups of symptoms, biliary colic and appearance of tumor. The condition is separated from distention of the gall-bladder due to obstruction of the common duct or pancreatic disease, as in these conditions the symptoms as well as the etiology are entirely different. As the causes of obstruction of the cystic passage are given, first, atresia by the valves in the cystic duct, or the pressure of a muco-cyst allowing free motion of the sac and consequent kinking of the canal. There are rare congenital causes.

The more common causes the author groups under four headings: (1) Obstruction from within by foreign bodies; (2) parietal lesions of the passage, such as neoplasms, adhesions, etc.; (3) occlusion due to extraperitoneal lesions; (4) faulty position of the liver and biliary passages.

Amongst all these causes the commonest ones are the presence of gall-stones, which temporarily obstruct the cystic duct and then roll back into the gall-bladder; kinking of the cystic duct due to traction, which in its turn is caused by mobile gall-bladder, kidney, liver, or other organs dragging, or adhesions.

Symptomatically the condition may be studied from a subjective and objective standpoint. The patient complains of all the phenomena of biliary colic.

The abdominal parietes of the right hypochondrium are rigid and exceedingly tender, often not allowing of any local examination. At other times the gall-bladder may be felt varying in size. The condition frequently continues for only two or three hours, after which both objective and subjective phenomena disappear. Occasionally slight icterus accompanies the condition, probably caused by pressure upon the cystic or common duct.

The diagnosis of this affection rests upon four main symptoms: its recurrence,

presence of tumor, absence of jaundice, and of signs of inflammation.

The treatment depends upon the etiology; a calculus blocking the cystic duct should be removed. If the condition is due to kinking of the duct the causative factor should be removed, a floating kidney or liver fixed in place, a long muco-cyst shortened.

The authors conclude this article by reporting eighteen cases showing the condition described.

THE TREATMENT OF FRACTURED PATELLA BY TRANSVERSE WIRING.

HAMILTON (*Edinburgh Medical Journal,* March, 1906) gives a synopsis of sixteen cases of fractured patella treated by wiring. In preparing the skin he uses a preparation of sulphate of barium, which removes the hair and also the hard, dead epithelium over the ligamentum patellæ much better than a razor will. If mixed with a little oxide of zinc it will not prove irritating. The flap is turned up rather than down. The operation is not performed for several days after the accident. Silver wire is passed through the drill holes by means of a cannula. The operation is completed in about sixteen minutes. In one of the cases the patella was in seven pieces, and an encircling wire had to be used. After the first day the temperature was uniformly normal. The splint is taken off in ten days. The patient is allowed out of bed in two weeks and encouraged to move the knee. This movement is carried to a right angle at the end of four weeks.

TUBERCULAR BONE DISEASE—TREATMENT BY X-RAYS.

Good results are reported by REDARD (*Annales de Chirurgie et d'Orthopedie,* No. 1, 1906) in the treatment of tuberculosis of the small joints of the hands and feet, and fair results in the knee and elbow. In the deeper joints, however, especially the hip and the spine, the results were almost negative. Improvement was noted in a case of fibrous ankylosis of the knee following tubercular arthritis. Redard believes the rays should be tried before resorting to operation.

CHOLEORRHAGIA AFTER REMOVAL OF HYDATIDS OF THE LIVER.

A continued flow of bile from the fistula occurs, according to TERRIER and DUJARRIER (*Revue de Chirurgie,* January, 1906), much more frequently than is stated in the text-books. According to recent statistics it follows in about three-fourths of all cases, and three theories have been advanced to account for it: (1) The theory of Landau that injury to the capsule causes laceration of the substance of the liver contiguous to it; (2) that of Urechselmann, who believes that dilated biliary ducts are found in the capsule; (3) that of Genzner, who believes that such cysts are frequently dilated bile-ducts. The last of these probably is true of very few cases. In most cases the condition tends to spontaneous recovery, but in a few the loss of bile is complete, the stools are decolorized, and the patient's life is threatened. In such event the bile passages should be examined for a probable obstruction, and when this is removed a drainage-tube may be passed from the gall-bladder through the ducts as far as possible and then forced into the cavity. The outer fistula may then be closed, and when the new passage is established the drain is removed and the gall-bladder also closed.

STERILIZATION OF THE HANDS.

STONEY (*Practitioner,* February, 1906) carried on some experiments in sterilization of the hands in order to determine if it is necessary to wear gloves in doing aseptic operations. He inoculated four tubes with material obtained from the hands in various ways at the beginning of the operation just after sterilization of the hands, and four tubes at the close of the operation. One source of material used for inoculation was a fragment of epidermis snipped off the finger, another flakes scraped off with a grooved director, another material scraped from under the nail, and another a knot of silk made by tying sterile silk with the sterilized hands. In all cases the instruments and hands were rinsed in sterile water before the specimen was taken to remove any excess of antiseptic.

The method of sterilizing the hands is as follows: (1) Scrub with sterilized

nail-brush in water as hot as can be borne with carbolic soap for five minutes, several changes of water being used; (2) rub thoroughly with sterile gauze wet with methylated spirit; (3) immerse for one minute in a watery solution of biniodide of mercury 1 to 500. Better results were obtained later on by substituting for steps 2 and 3 in the above process of sterilization soaking for three minutes in

Commercial alcohol (90-per-cent), 26 ounces.
Hydrochloric acid (commercial), 2½ ounces.
Water, 11 ounces.
Corrosive sublimate, 16 grains.

This fluid was not found to be harmful to the hands. In a few cases in the first series of experiments the staphylococcus albus or aureus developed, and in the second series a sporing bacillus. The experiments show that it is possible to render the hands sterile, or at least free from pathogenic bacteria, by a simple and short method. The wearing of gloves, therefore, during the performance of an aseptic operation is not necessary, though it is advisable in the case of those operators whose skin is either unusually difficult to sterilize or easily injured by the constant use of antiseptics.

LARYNGEAL INTUBATION BEFORE OPERATIONS ON THE NASOPHARYNX.

To avoid the dangers and difficulties of operating on the nasopharynx KUHN (*Centralblatt für Chirurgie,* No. 9) recommends intubation through the mouth.

The difficulties of the present method are semi-narcosis, on account of the danger of inspiring blood, the difficulty of controlling hemorrhage, the dyspnea occasioned by the position of the root of the tongue when the head is drawn far back, and incompleteness owing to haste and poor vision. On account of these difficulties various methods of reaching the nasopharynx have been proposed, which may be classed as nasal, maxillary, and oral. The first two may be discarded on account of the lesser room and the deformity following them. The disadvantages of the last are avoided by intubation, which permits the fulfilment of these conditions: (1) The mouth must be kept constantly as far open as possible; (2) its function as a way to and from the stomach and for respiration must cease. Hemorrhage can easily be controlled, as the entire nasopharynx may be packed with gauze, and vomiting may be prevented by forcing a tampon with a cord attached down into the esophagus.

When the mouth has been thoroughly cleansed we may split the soft palate in the middle line and remove subperiosteally as much of the hard palate as necessary. In this way sufficient room is obtained for the removal of large tumors.

LITHOLAPAXY VS. LITHOTOMY.

SWINBURNE (*American Medicine,* March 10, 1906) states it as his belief that among American surgeons there are comparatively few who practice litholapaxy, since to them a suprapubic cystotomy seems easier and safer. He believes that in uncomplicated cases with a stone of moderate size and the bladder and kidneys uninfected, litholapaxy should be the operation of choice. When, however, there is marked cystitis accompanying pyelitis, diverticula and sacculations of the trabeculated bladder, an encysted stone, or when for any reason the bladder needs prolonged drainage, undoubtedly the cutting operation is to be preferred. Swinburne advises the use of a cystoscope as a means of learning the condition of the bladder wall and something of the size and character of the calculus, the position it usually takes in the bladder, and whether more than one is present. He prefers a medium size Keyes lithotrite, and employs Chismore's evacuator, which is simple in construction, reasonable in price, readily replaced when worn out, and easily sterilized. General anesthesia is chosen when feasible. The patients when ready for operation are placed in the dorsal decubitus with the hips elevated. Operation generally lasts from one-half to three-fourths of an hour. Thereafter the patient is put to bed for twenty-four to forty-eight hours. At the end of the first day he sits up, and goes out on the following day. At the end of the second week the bladder is examined with the cystoscope (usually under cocaine) to see if any fragments are left.

In case of difficulty in seizing the stone and crushing it prolonged and futile efforts are advised against, for under such circumstances suprapubic cystotomy is the safest means of procedure.

CATHETER CYSTITIS IN THE FEMALE—ITS AVOIDANCE.

It is believed by GERSUNY (*Centralblatt für Gynäkologie*, No. 4, 1906) that cystitis following frequent catheterization is due to the urine flowing off faster than the bladder contracts, and the relaxed wall being drawn into the eye of the catheter is injured and rendered liable to infection. This is largely due to the catheter being introduced too far, and he avoids all danger by the use of a glass catheter provided with a disk two inches from the end, which prevents its being introduced too far.

Reviews.

PROGRESSIVE MEDICINE. Edited by H. A. Hare, M.D., and H. R. M. Landis, M.D. Volume I, March, 1906. Single volume, $2.00; yearly price, $6.00.

Progressive Medicine for March contains, as in previous years, articles upon the surgery of the head, neck, and thorax, upon infectious diseases, upon the diseases of children, upon rhinology and laryngology, and upon otology. Every general surgeon will find in Dr. Frazier's article a synopsis of all that is best in the surgical literature of the past year so far as it deals with the surgery of the parts under his jurisdiction. Excellent as his articles have been in the past, this one if anything surpasses his previous contributions, and he takes the opportunity to add to the literature of the year additional information which he has gleaned from literature in general. The article of Dr. Preble upon the acute infectious diseases is as skilfully compiled as heretofore. Many of the profession recognize the fact that Dr. Preble has become an authority upon these subjects, and he writes in an interesting manner in regard to the transmission, the prophylaxis, and treatment of such common maladies as acute rheumatism, croupous pneumonia, and influenza. In Dr. Crandall's article upon diseases of children he gives a careful but conservative view of the methods of feeding which are best suited to children, and also discusses the maladies which are peculiar to that period of life. In Dr. Kyle's article upon diseases of the nose and throat a careful consideration is given of operative procedures for the relief of deformities, and of the best methods of operating upon the tonsils and accessory nasal cavities. In Dr. Randall's article the various operations for diseases of the ear are considered, and particular attention is paid to the methods which can be employed for the production of the best results in the relief of deafness.

DISEASES OF THE NERVOUS SYSTEM FROM ACCIDENT AND INJURY. By Pearce Bailey, M.D. D. Appleton & Company, New York, 1906.

Upon the appearance of Dr. Bailey's book upon "Accident and Injury in Their Relations to the Nervous System" several years ago it at once took a valued place in modern medical literature, and it became a standard authority for railway physicians and surgeons and for neurologists, who constantly see cases of traumatic neurosis. On the demand for a second edition Dr. Bailey has embraced the opportunity to give his book a larger scope, and the present volume is about one-third larger than his first edition. It is because of this increase in scope that he has seen fit to change its title, and has found it necessary to recast the greater part of the text. Dr. Bailey does not deal with surgical conditions or the remedies which surgeons may employ for the relief of nervous lesions due to injury, but deals rather with their diagnosis and the medical aspect of the subject. In the introductory portions of the book the past and present history of the patient is carefully considered, along with methods devoted to the determination of the character of the actual injury. After this in Part I we find nine chapters devoted to the organic effects of injury to the nervous system, beginning with injuries to the brain, injuries to the spinal cord, and, finally, injury to the peripheral nerves. Last of all he considers trauma as a factor in the causation of certain degenerative diseases of the entire nervous system. In the second part of the book he deals in six chapters with the functional effects of injury, such as traumatic neuroses and traumatic neuras-

thenia, insanity from nervous shock and traumatic hysteria, the last chapter dealing with the treatment of traumatic neuroses. The third part of the book is devoted to medicolegal considerations, the claims of patients and of expert witnesses, and the last pages of the volume contain a bibliography, an index of names, and an index of subjects. Considerable interest is added to the volume by the 94 illustrations which are scattered through its pages. Dr. Bailey's book occupies a unique place in medical literature. It cannot well be compared with other works upon neurology, but it can be said that it holds a unique place not only because of lack of competition but also because of its innate worth. As nearly all physicians are deeply interested in the subject of which it treats, it will doubtless find a place upon the shelves of a very large number of practitioners.

THE INTERNATIONAL MEDICAL ANNUAL. Twenty-fourth Year. E. B. Treat & Company, New York, 1906. Price $3.00.

This issue of the "Medical Annual" opens with an article upon Therapeutics by Dr. Ralph Stockman, the Professor of Materia Medica and Therapeutics in the University of Glasgow, and Frank J. Charteris, his assistant. The first 80 pages are devoted to this department. Part II is entitled "A Dictionary of Treatment, or a Review of Medical and Surgical Progress for 1905," to which various authors contribute, and in this part will be found operative as well as medicinal measures of relief. The book is quite freely illustrated, and deals with nearly all the pathological conditions commonly met with in practice. The individual articles are, of course, not exhaustive, and in some instances it would be necessary for the reader to refer to the originals to get a full statement of the author's meaning. On the other hand, it is a fact that the literature which is embodied in this volume provides the reader with a clear conception of what has been done, and gives him a key or a clue to medical literature for the past year. The book closes with a short discussion on sanitary science by Dr. Priestly, the medical officer of health in the borough of Lambeth, London, a bibliography of some of the important books which have appeared during the past year, and a copious index.

THE DYNAMICS OF LIVING MATTER. By Jacques Loeb. The Columbia University Press. The MacMillan Company, New York, 1906. Price $3.00.

This volume is one of the Columbia University biological series, edited by Henry Fairfield Osborne and Edmund B. Wilson. A number of the volumes belonging to this series have already been prepared and edited. The first was entitled "From the Greeks to Darwin," by Osborne; the second, on "Amphioxus and the Ancestry of the Vertebrates," by Willey. Others are entitled "The Cell in Development and Inheritance," by Wilson; "The Foundations of Zoölogy," by Brooks; "The Protozoa," by Calkins; and "Regeneration," by Morgan. Two other volumes are in the course of preparation, one being upon "The Structure and Habits of Ants," by Wheeler, and the other on the "Behavior of the Lower Organisms," by Jennings.

It is hardly necessary to state that the present volume is technical and scientific in a high degree. After some introductory remarks the second part deals with the "General Chemistry of Life Phenomena;" another with the "General Constitution of Living Matter;" the third with "Some Physical Manifestations of Life;" the fourth with "The Rôle of Electrolytes in the Formation and Preservation of Living Matter;" the fifth with "Effects of Heat and Radiant Energy upon Living Matter;" and then follow chapters upon Heliotropism, Fertilization, Heredity, and the Dynamics of Regenerative Processes. A "concluding" chapter is added, and the book closes with an index to its contents, containing not only the subjects discussed, but the names of the quoted authors who have added much to these subjects. The name of Professor Loeb is so closely associated with this subject and he occupies so high a position in the world of biology that those who are interested along these lines will find much of great interest in its pages.

CASE TEACHING IN MEDICINE. By Richard C. Cabot, A.B., M.D. D. C. Heath & Company, Boston, 1906. Price $1.50.

Dr. Cabot has devised this little book on Case Teaching to illustrate the methods which he employs in the differential diagnosis, prognosis, and treatment of actual cases. It is interleaved so that students may make additional notes as

they follow the methods suggested by the author. Typical cases are cited for diagnosis and treatment, and after the description of the case there follows a series of questions which are to be put to the patient or to the student on reaching his diagnostic conclusions. Manifestly, therefore, the volume is intended rather for students than practitioners. It is an interesting illustration of some of the best methods which are employed in bedside teaching at the present time, and physicians who have become somewhat lax in their methods of examining cases will find it an excellent means of increasing their diagnostic acumen and skill.

ANNUAL REPORT OF THE SURGEON-GENERAL OF THE PUBLIC HEALTH AND THE MARINE HOSPITAL SERVICE OF THE UNITED STATES FOR 1905. The Government Printing Office, Washington, 1906.

As in previous years the present report deals with many matters of great interest to medical men, and gives those of us who live in the United States some conception of the immense amount of work which is being carried on by this department of the government in our insular possessions. Accurate information is provided in regard to work of the National Quarantine Stations and the inspection of immigrants on both sides of the Atlantic and on the Pacific coast. Information is also given as to the methods which have been employed for the purpose of combating yellow fever during the recent outbreak in the South, the Surgeon-General himself contributing an article upon "Yellow Fever: Its Origin and Prevention."

BOSTON: THE PLACE AND THE PEOPLE. By M. A. De Wolfe Howe. The MacMillan Company, New York, 1903. Price $2.50.

In view of the approaching meeting of the American Medical Association in Boston many of our readers will doubtless visit this historic town, not only to benefit by the medical information which they may obtain at such a representative gathering, but also in order that they may become personally acquainted with the various historical points of interest in a city which is so pregnant with Revolutionary lore. The book under notice is one which has been written with the idea of presenting to the reader all that is best concerning Boston Town in the past and at the present, and we can cordially commend it to those of our readers who wish to become familiar with the points which they ought to see and with the facts which they ought to know before they go to Boston. Amongst other illustrations we find an interesting one showing one of the first operations under ether in the Massachusetts General Hospital.

THE NATURAL LAWS OF SEXUAL LIFE. Medical-Sociological Researches, by Anton Nystrom. Authorized Translation from the Third Swedish Edition by Carl Sandzen, A.M., M.D., Ph.D. The Burton Company, Kansas City, Mo. Price $2.00.

During the last few years there have been a number of books published along lines similar to that followed in this volume. The difficulty in dealing with this subject is manifest as each volume appears. The present volume has no hesitancy in "calling a spade a spade," and quotes, as so many volumes of this kind do, from Scripture as well as from medical literature and pseudo-medical literature dealing with these subjects. There is much that is interesting and much that is anything but elevating in the volume before us. The subject with which it deals is pretty sure to result in its having a sale which will be sufficient to please the author, the translator, and the publishers.

A TEXT-BOOK OF PRESCRIPTION WRITING AND PHARMACY. By Bernard Fantus, M.D. Second Edition, Thoroughly Revised. The Chicago Medical Book Company, 1906. Price $3.00.

The object of this book is not only to teach the medical student how to write prescriptions, but also to provide laboratory exercises in pharmacy and a reference list of official drugs. In the part devoted to prescription writing information as to the form and language of prescriptions, the determination of quantities, the composition of prescriptions, prescription ethics, and 120 problems in prescription writing are found in the text. The author disclaims any intention of making the student an expert apothecary, but he believes that his book "has a mission," and thinks that the problems in prescription writing are a large part of that mission. The book contains 416 pages, is well printed, and, so far as we can observe, admirably fulfils the purpose for which it was written.

THE TEST-DIET IN INTESTINAL DISEASES. By Professor Dr. Adolph Schmidt. Translated by Charles D. Aaron, M.D. The F. A. Davis Company, Philadelphia, 1906. Price $1.00.

The object of this little manual, of less than ninety pages, is to call attention to the value of the examination of the functions of the intestines by the use of a test-diet with the idea that much information can thereby be gained for diagnostic and therapeutic purposes. The book opens with a small plate designed to illustrate the microscopical appearance of normal and abnormal test-diet feces. The first part deals with the functional diagnosis of disorders of the stomach and intestine, the second with the test-diet itself, and gives definite instructions as to the means which are to be administered morning, noon, and night. The third deals with the diagnostic significance of pathological findings in the feces, and later we find consideration of intestinal disturbances due to the stomach, the liver, and the pancreas. The book closes with remarks upon the treatment of nervous diarrhea and chronic constipation. As these methods of diagnosis are becoming more and more popular in this country and are proving themselves of great value to the active practitioner in dealing with obscure and difficult cases, we believe that this little volume has before it a promising career, which it certainly deserves.

A MANUAL OF DISEASES OF THE EYE FOR STUDENTS AND GENERAL PRACTITIONERS. By Charles H. May, M.D. Fourth Edition, Revised. Copiously Illustrated. William Wood & Company, New York, 1905.

As it is only about eigtheen months since the third edition of this small manual appeared, and as it has been translated into German and Italian, it can readily be seen that it must meet professional needs in a very satisfactory manner. The book is not designed as an exhaustive text-book or work of reference upon diseases of the eye. It is a small octavo-page volume of less than 400 pages, designed as much for medical students and general practitioners as for ophthalmologists. It contains a considerable number of plates which are far better in their execution than most colored plates which are published in this country, and compare favorably with the best that are produced in Germany. Doubtless many of our readers are in need of just such a condensed yet accurate consideration of this important subject. They cannot get a better book than this to meet their needs.

A LABORATORY GUIDE IN EXPERIMENTAL PHARMACOLOGY. By Charles W. Edmonds, A.M., M.D., and Arthur R. Cushny, A.M., M.D. George Wahr, Ann Arbor, 1906. Price $1.50.

This small volume embodies the course in pharmacology which is carried out in the University of Michigan by its authors. We are told that after a few days devoted to purely pharmacological work, the student is taken into the realm of experimental pharmacology and taught the use of physiological apparatus at the same time that he studies the influence of various drugs which possess very definite and characteristic physiological activities, such as caffeine, morphine, adrenalin, and digitalis. The illustrations show the apparatus which is employed. Personally we doubt whether it is necessary or wise to insist upon all medical students carrying out an individual course in this particular branch. We cannot help feeling that for the future practitioner the same amount of time devoted to practical therapeutics would be spent more profitably. This, however, is a matter of opinion between the experimental pharmacologist on the one hand and the active practitioner on the other. To teachers of pharmacology and therapeutics we can cordially recommend this book, as it will give not only their students but themselves valuable ideas along pharmacological lines.

A MANUAL OF PSYCHIATRY. By J. R. DeFursac, M.D. Translated from the French by A. J. Rosanoff, M.D., and Edited by Joseph Collins, M.D. John Wiley & Son, New York, 1905.

This small octavo volume of about 350 pages will prove interesting to the general practitioner who wishes to brush up on the subject of mental diseases. The opening chapters deal with the etiology and symptomatology of the various forms of insanity, and then practical suggestions are given as to the methods of examining patients who are supposed to be insane, and directions are given as to the best means of treating these various states, much of the information and treatment being introduced by the translator

or American editor. As the book is written by an alienist of experience in France, translated by another experienced alienist in America, and edited by a well known neurologist and alienist of New York City, the purchaser can rest assured that it is a reliable and useful manual of the subjects of which it treats.

Correspondence.

LONDON LETTER.

By G. F. Still, M.A., M.D.

At a recent meeting of the Royal Medicochirurgical Society an interesting discussion took place on the vexed question of the cause of optic neuritis with intracranial tumors. It was pointed out that in most of the cases in which this association occurred—and optic neuritis was present with 70 per cent of brain tumors—there was evident increase of intracranial pressure, but modern theories attributed the neuritis not to pressure alone but to the presence also of some toxin due to the tumor. Dr. Toots insisted on some of the difficulties which beset this question: if due to a poison, then it is remarkable that a very small tumor may cause intense optic neuritis, while a very large tumor may cause little or none. Moreover, in the very disease in which the presence of the toxin in the brain had been asserted, general paralysis of the insane, optic neuritis was quite the exception. Dr. A. J. Whiting thought that there was at least some support for the pressure theory in the clinical fact that trephining undoubtedly saved the vision in some cases which otherwise would progress inevitably to optic atrophy.

If ever the motto of one of the London exhibitions years ago was justified, it is so to-day, "Sanitas sanitatum omnia sanitas;" and still the pursuit of health is the topic in all ranks of society. We have in London unfortunately plenty of men, and some women, some with medical qualifications, some without, who, with the little knowledge which is a dangerous thing, must needs seek notoriety by addressing the public on questions of diet, regimen, sanitation, and various other subjects on which their silence would be of more value than their advice. And the public, unable to discriminate between the statements which come out of a ripe experience and those which come of hasty conclusions from a very little personal observation or from none at all, still rush to these soi-disant authorities, seeking, like the Athenians of old, "some new thing" in the problems of health. Fortunately we have also plenty of real authorities who are ever willing to help in educating the public in matters of health, and the desire to promote such education is evidenced by the growth of various associations for that purpose. This week the National Health Society is being addressed by three distinguished scientists—Dr. R. Hutchison on Foods, Professor Sims Woodhead on Temperance, and Sir Dyce Duckworth on Dust; while the National Association for the Prevention of Consumption has just held its annual meeting, at which Mr. Malcolm Morris declared that if only the working classes would help it would be possible to rid them of one of the most insidious diseases in the country, a measure which Mr. George Harwood, M.P., said would add, more than any other single change could do, to the effective working power of the working classes. The Earl of Derby regretted that in England there is no efficient legislation to enable local authorities to check the disease; and in the same strain Sir William Broadbent declared that working people ought to be protected from consumption, as they are from typhoid fever—they ought not to be allowed to work in infected workrooms or live in dwellings which favored the onset of the disease. The milk supply also ought to be properly supervised, as it is responsible for much phthisis, and to a large degree for the frequency of hip-disease amongst children in large towns. In one town in England (Sheffield) the notification of phthisis has been made compulsory. Scotland has always been ahead of us in the prevention of consumption. It is to be hoped that now we have at the head of the Local Government Board a man who knows something about the working classes this reproach will be taken away. Loud applause greeted these remarks, but we confess to a doubt whether the right honorable gentleman referred to would have appreciated the applause if he had been there, for we believe that since his accession to power a few

weeks ago the remedying of every known evil, sanitary and otherwise, affecting the working man has been complacently laid upon the shoulders of this newly-elevated official, Mr. John Burns.

There is also an Institute of Hygiene, which has been asserting its existence this month by a lecture on "Popular Foods," in which the extraordinary statement was made that condensed milk might be depended upon to reduce infantile mortality during the first year of life if only ignorant prejudices were removed. "Thousands of the healthiest children, reared on condensed milk alone, were stated to attest the great value of this food." The lecturer was probably right in supposing that some prejudice exists against condensed milk, but he seems to have attributed the ignorance to the wrong party, and a larger experience or more careful observation of the too often disastrous results of condensed milk when used for several months in the feeding of infants might have considerably modified his eulogium.

Dr. Samuel West has recently been addressing the Medical Society on the treatment of chronic renal disease. He pointed out one result which is common in the dieting of these cases, too long continuance of a milk diet. The food should be varied, and there is no need to exclude eggs; red meat can be given as safely as white. But alcohol and concentrated meat extracts should certainly not be given. The practical difficulty is to know how long a milk diet ought to be continued, and on this point Dr. de Haviland Hall gave his experience in favor of limitation to milk food for three or four weeks. There seemed to be a consensus of opinion in favor of pilocarpine as a valuable means of keeping down the pulse tension; for the same purpose the liquor trinitrini in doses of one-third of a minim was recommended. Sir Lauder Brunton, who is now *inter alia* president of the Medical Society of London, recommends a combination of strophanthus with nitrites where there is evidence of heart failure with the raised tension of nephritis.

We are seldom long without examples of the grave charges to which medical men are constantly liable from patients and public, and during this month another instance of this has occurred in the case of a doctor in London who, while attending a case of scarlet fever, was called to attend a midwifery. Five days after delivery the woman developed scarlet fever, and subsequently white-leg and pelvic abscess. The doctor was sued for negligence in not taking sufficient precautions to prevent infection and in not warning the woman's husband of the risk which might occur from his attendance. The jury, after a five-days' trial, gave a verdict for the defendant; but as every medical man knows, a "verdict for the defendant with costs" falls far short of covering the damage done to the medical man's practice by these vexatious charges, however clearly they may be disproved.

We hear a rumor that St. George's Hospital is about to start a postgraduate school in addition to its ordinary medical school. Some such method of utilizing the material and the experience of our London hospitals has been frequently mooted of late, for the ordinary students have tended more and more of recent years to gravitate to two or three of the largest hospitals, while the hospitals which are slightly smaller, though still large and staffed with physicians and surgeons of high standing, are almost depleted of students. Professor Osler has recently lent his powerful aid to the teaching resources of St. George's Hospital, and its internal resources should prove strong enough to make its post-graduate school a great attraction.

The Athenæum Club, which has on its rolls the names of many of London's most distinguished men in all departments, has just conferred its membership on Professor Osler.

BERLIN LETTER.

By Octave Rozenraad, M.D., Berlin.

A very important institute has lately been given to the profession by the Kaiser in memory of the late Empress Frederick. This institute, called "the Kaiserin Friedrich Haus," has been erected as a "home" for the practicing physician. It contains a great number of surgical and clinical instruments, the latest electrical and *x*-ray apparatus, and a special department for tropical medicine and for climato-therapeutics.

The Kaiser said in his address that the medical profession was of the highest importance in all social matters, and that he wished to help the profession in its hard work as far as he could. Lectures are given at the "Haus" on the latest progress in medical science. A beautiful art exhibition of the old Dutch painters referring to medical subjects is actually opened. The physician coming to Berlin will find more concentrated knowledge there than in a single hospital. I wish also to mention an exhibition on the treatment and nursing of the baby, "The Säuglingsheim," an exhibition for the public, and special care is given to the instruction of the mother not to overfeed the child. A new "couveuse" is exhibited there by Dr. Rommel, physician to the Säuglingsheim in Munich. The heat of the "couveuse" is regulated through the electrical currents or through gas, and it has the advantage that it may be used in every nurse's room.

I reported in my last letter on the treatment with Marmorek's serum. In Vienna Dr. Frey has used it on sixteen patients suffering from tuberculosis during two years, and he has seen markedly good results. Some patients received it hypodermically, some per rectum. This last method is considered of great use and avoids local irritation. The patients soon felt better, and the temperature went down. After a time a pathological change was noticed, too, and the sound of the lungs, which had been impaired, became sonorous after a time.

The lack of meat still continues, and Dr. Goldstein has made researches to prove that the German population does not get sufficient meat. A working man ought to get 31 kilogrammes of meat albumen per annum, but he receives only 8 kilogrammes; bread, cheese, and milk have to fill the gap of 23 kilogrammes. Nowadays only 40 kilogrammes are per capita of the population, and we ought to have 72. As the high protective tariff system has produced an insufficiency of meat, the population has to take to alcohol to give the calories to the organism that are wanted.

In the treatment with *x*-rays Dr. Hahn has used Esmarch's method in anemizing the extremities, and he has noticed that the limbs which contained little blood owing to the ligature gave better radiograms than those which were hyperemic.

Two more cases of epitheliomata have been successfully cured by radium. Dr. Schiff recently reported on several cases of cancer of the skin successfully treated by radium rays combined with arsenic or peroxide of hydrogen. Two of his patients had refused an operation, but were cured by the radium treatment. In nervous conditions radium has been used with the same success. Dr. Axmann's radiophor, which is applied as a leaf that is made radioactive, gives relief in cases of facial and orbital neuralgia. The radioactivity of the atmosphere has to be reckoned as a therapeutic agent as well. Recent researches prove the great radioactivity in Alpine heights, and the well known influence on nervous conditions in Alpine health resorts seems to find an explanation in this. Dr. Zuntz, Caspari, and Franz Müller, who have published a standard work on climate, refer to the fact that mental work has always been better done in Alpine heights. Since the time of Buddha, who lived in the heights of the Himalayas before developing his religious theories, philosophers found relief in Alpine climates.

Melancholia simplex, now so frequent in large cities, is improved by sending the patient to Alpine heights, and even such places as Homburg, in the hills of the Taunus, are a health resort for the overworked business man, as the pure air of the Engadine is to the consumptive or the dry air of Egypt is to patients suffering from kidney trouble.

A patient suffering from arteriosclerosis, emphysema, or gout ought to avoid Alpine climates, as hemorrhages might ensue.

Goldscheider and Leyden have during the last years introduced these so-called "physicalisch-diatetische Heilmethoden," and the quackery with hydrotherapy has been replaced by a sound scientific basis; not only has hydrotherapy been used, but sun-baths, sun-rays, in the treatment of tuberculosis laryngis, and gymnastics for locomotor ataxia, have been successfully employed. The Nauheim baths of carbonic acid are given artificially now throughout the country, and their value in treating locomotor ataxia has been ascertained.

The bad weather during the last months has caused many cases of rheumatism here; the treatment with mesotan seems to do a great deal of good, but by far the best results follow the application with "fango," a mud which comes from Battaglia, on the Italian Lakes. Its therapeutic effects seem to be due to the radioactive substances it contains.

In an address to the Berliner Clinical Society, Goldscheider said that fever is so useful in pathological conditions that we ought not to try to diminish it; it is due to an intoxication of the organism, and an attempt to diminish it may be as fatal as an attempt to cut short dysentery, for in both cases an elimination of toxic substance takes place.

The faradic treatment of fibromyomata is once more advocated by Dr. Witte. The electric current has the advantage of stopping the bleeding very soon. After a time the fibromyomata degenerate, and therefore the operation is avoided. The patients usually do not wish to be operated as soon as the bleeding stops. When in Paris I saw many cases of fibromyomata successfully treated through Apostoli's treatment of electric Sondage by Dr. Zimmern, but the treatment demands great care, though it has the advantage of being a conservative method.

Notes and Queries.

SWEET SPIRIT OF NITER.

Minter writes to the *Journal of the American Medical Association* of February 3, 1906, about the physical and medicinal properties of sweet spirit of niter. He wishes to know whether or not sweet spirit of niter is of any use after it turns acid. Potter's Materia Medica says: "It soon turns acid on standing, and should not be kept long." He has had a great deal of trouble getting it sweet, and on making complaint to his druggist about a package received that was intensely acid, he replied that the article was C. P. and all right, that the name sweet spirit of niter did not indicate that it was sweet, and that a small quantity of bicarbonate of soda could be added to blunt the sharpness. When fever mixtures are made with the acid stuff it effervesces with potassium citrate, and does that not destroy the properties of the latter drug?

To this the editor of the *Journal* makes the following reply: "Spirit of nitrous ether was called 'sweet' spirit of niter to emphasize the fact that when pure and fresh it should have an agreeable, sweetish taste. It is a solution in alcohol of nitrous ether, which is ethyl nitrite with some other products derived in the making. This nitrous ether may be kept for a considerable time without change in alcoholic solution, but on exposure, or on dilution with water, or watery mixtures, it is rapidly decomposed. This is what happens to the spirit which often contains water, and, therefore, turns acid, loses its strength, and becomes unfit for use. To neutralize the acid by placing a crystal of potassium bicarbonate in the bottle is of course simply a makeshift. When spirit of nitrous ether effervesces with alkalies, it is valueless and should be replaced by a fresh supply. The only way to insure a fresh article is to obtain the spirit in original one-pound bottles of well known make, and then to keep it in a cool, dark place in a tightly stopped container. The concentrated nitrous ether may also be obtained in hermetically sealed glass tubes, which on dilution with alcohol produces at once a fresh and full-strength spirit."

SPOONS.

The *Scottish Medical and Surgical Journal* for February, 1906, speaks editorially on this subject:

It has often been remarked that the things which most strongly excite our interest are unusual, while common, everyday objects often fail to receive the attention they deserve. A good example of this is furnished by the undoubted fact that there exists a very wide-spread misapprehension as to the average capacity of the ordinary varieties of the domestic spoon. This misapprehension is a matter of some moment, and not undeserving of remark in this journal, seeing that spoons are commonly made use of as domestic measures for medicine. The fact to which we desire to draw attention is the great divergence between the actual capacity of spoons and the nominal capacity as understood by prescribers and dispensers of medicine. The orthodox teach-

ing on the subject is that one fluidrachm corresponds to a teaspoonful; that a dessertspoon holds two drachms; and that the capacity of a tablespoon is four drachms, or half an ounce. This teaching, however, is totally incorrect. As a matter of fact, each class of spoon holds about twice as much as it is commonly supposed to do. No doubt spoons themselves vary somewhat in size, and there is also room for some divergence of opinion as to when a spoon is really full. The majority of tablespoons, however, hold a full ounce without difficulty, though a few drops more will cause an overflow. Some particularly large tablespoons will hold fully a drachm more than an ounce. The ordinary dessertspoon will easily hold half an ounce. Teaspoons vary in capacity more than the other kinds of spoon. Those used for afternoon tea often hold just about a drachm—sometimes even less; ordinary domestic teaspoons hold a drachm and a half, or even two drachms; while the kitchen teaspoon, so often used for measuring medicine, holds rather more than two drachms. Upon measuring such a spoon, it was found that seven spoonfuls correspond to fully two ounces. It is obvious, therefore, that the common practice of prescribing medicine by the spoonful may easily be attended by considerable danger if full doses of powerful drugs are being administered. No doubt patients often guard themselves by not filling the spoon used quite full, but we have often known a six-ounce bottle, of which a tablespoonful was to be taken three times daily, to be finished in two days, and not very long ago we met with a case in which the use of a kitchen teaspoon as a measure was almost attended by very serious consequences. We were asked by a student to see a baby whom he was visiting. The child, we were told, seemed to be quite well, but was apt to go into a fit if any one touched it. The fits were unattended by loss of consciousness. On visiting the child we found the description quite correct, but were at a loss to understand the nature of the illness. However, the mother happened to mention that the child was getting a "tonic" which another student had ordered shortly before, and on looking at the prescription we found that drachm doses of the mixture contained considerably larger doses of strychnine than we should have cared to prescribe for an infant of such tender years. Moreover, on asking to see the spoon by which the medicine was measured, we found it was a very large one, though nominally a teaspoon, its capacity being considerably over two drachms. The fits rapidly disappeared when the tonic was replaced by small doses of aqua menthæ piperitæ.

It would be interesting to know how the current misapprehension as to the size of spoons has come about. Is it just one example more of a mistake in some old text-book having been copied into all subsequent text-books without any one taking the trouble to verify the statement? We think not. More probably the error is due to a gradual change in the size of spoons. The modern dessert- and tablespoons are much larger than those in common use forty or fifty years ago. Teaspoons seem to have varied more in size, some old teaspoons being quite as large as those now in use, while others were much smaller. Some old silver teaspoons and dessertspoons hold fairly accurately one and two drachms respectively. Why spoons should have increased in size would be difficult to say. The change may be simply due to the fluctuation of fashion. It can scarcely be maintained that the size of the human mouth has greatly increased in a generation or so. A possible explanation may be found in the substitution of electroplate for silver, or in the comparative cheapness in recent years of the pure metal.

The moral to be drawn from the foregoing remarks evidently is that medicines should be prescribed in drachms and ounces, and measured in a proper measuring-glass. The proper directions should be written on the prescription in English, not in Latin, for if the dose is indicated by symbol, or even in unabbreviated Latin, the chemist will inevitably translate in terms of spoons. If we order drachmam unam to be administered, we shall certainly find one teaspoonful indicated as the dose upon the label of the bottle. On the other hand, if we order in plain English one drachm, two drachms, or half an ounce, we may induce our patients to purchase a small measuring-glass, and save them from the consequences of an overdose.